

Well Name: POLO AOP FEDERAL COM	Well Location: T19S / R25E / SEC 10 / NESE / 32.673279 / -104.464943	County or Parish/State: EDDY / NM
Well Number: 104H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM023855B	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001555170	Operator: SPUR ENERGY PARTNERS LLC	

Notice of Intent

Sundry ID: 2896915

Type of Submission: Notice of Intent	Type of Action: APD Change
Date Sundry Submitted: 02/19/2026	Time Sundry Submitted: 01:02
Date proposed operation will begin: 04/01/2026	

Procedure Description: Spur Energy Partners, LLC would like to request the following changes to the previously approved well name, surface hole location (SHL), bottom hole location (BHL) and drill plan. Change well name from Polo AOP Federal Com 104H to Polo AOP Federal Com 10H. Change SHL from 1911' FSL & 266' FEL, NESE, Sec. 10, T.19S, R.25E to 1684' FSL & 175' FEL, NESE, Sec. 10, T.19S, R.25E. Change BHL from 2387' FSL & 100' FWL, NWSW, Sec. 10, T.19S, R.25E to 2205' FSL & 50' FWL, NWSW, Sec. 10, T.19S, R.25E. Changes to the drill plan are detailed in the attached supporting documents. Please see the attached revised C102 plat, directional plan, anticollision report, production casing spec sheets and other diagrams for additional information.

NOI Attachments

Procedure Description

Polo_10H_Sundry_Attachment_20260219130143.pdf

Received by OCD: 4/2/2026 6:19:20 PM

Page 2 of 71

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Lease Number: NMNM023855B	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001555170	Operator: SPUR ENERGY PARTNERS LLC	

Operator

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: CORY WALK	Signed on: FEB 19, 2026 01:01 PM
Name: SPUR ENERGY PARTNERS LLC	
Title: Permitting Agent	
Street Address: 5 CALIENTE ROAD SUITE 3A	
City: SANTA FE	State: NM
Phone: (505) 466-8120	
Email address: AFMSS@PERMITSWEST.COM	

Field

Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

BLM Point of Contact

BLM POC Name: CODY LAYTON	BLM POC Title: Assistant Field Manager Lands & Minerals
BLM POC Phone: 5752345959	BLM POC Email Address: CLAYTON@BLM.GOV
Disposition: Approved	Disposition Date: 04/02/2026
Signature: Cody R. Layton	

Form 3160-5
(October 2024)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0220
Expires: October 31, 2027

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

3a. Address

3b. Phone No. (include area code)

4. Location of Well (Footage, Sec., T.,R.,M., or Survey Description)

7. If Unit of CA/Agreement, Name and/or No.

8. Well Name and No.

9. API Well No.

10. Field and Pool or Exploratory Area

11. Country or Parish, State

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION				
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off	
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity	
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other	
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon		
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal		

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be perfonned or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Title

Signature

Date

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

Additional Information

Location of Well

0. SHL: NESE / 1911 FSL / 266 FEL / TWSP: 19S / RANGE: 25E / SECTION: 10 / LAT: 32.673279 / LONG: -104.464943 (TVD: 0 feet, MD: 0 feet)

PPP: NWSE / 2347 FSL / 1328 FEL / TWSP: 19S / RANGE: 25E / SECTION: 10 / LAT: 32.674465 / LONG: -104.4684 (TVD: 2809 feet, MD: 4700 feet)

PPP: NESE / 2301 FSL / 100 FEL / TWSP: 19S / RANGE: 25E / SECTION: 10 / LAT: 32.674353 / LONG: -104.464411 (TVD: 2840 feet, MD: 3456 feet)

BHL: NWSW / 2387 FSL / 100 FWL / TWSP: 19S / RANGE: 25E / SECTION: 10 / LAT: 32.674823 / LONG: -104.481177 (TVD: 2710 feet, MD: 8619 feet)

CONFIDENTIAL

C-102 Submit Electronically Via OCD Permitting	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION		Revised July 9, 2024	
			Submittal Type:	☐ Initial Submittal
				☒ Amended Report
		☐ As Drilled		

WELL LOCATION INFORMATION

API Number 30-015-55170	Pool Code 97565	Pool Name N. SEVEN RIVERS; GLORIETA-YESO
Property Code	Property Name POLO AOP FEDERAL COM	Well Number 10H
OGRID No. 328947	Operator Name SPUR ENERGY PARTNERS LLC.	Ground Level Elevation 3462'
Surface Owner: ☐ State ☒ Fee ☐ Tribal ☐ Federal		Mineral Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal

Surface Location

UL I	Section 10	Township 19S	Range 25E	Lot	Ft. from N/S 1684 FSL	Ft. from E/W 175 FEL	Latitude 32.6726642°N	Longitude 104.4646007°W	County EDDY
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Bottom Hole Location

UL L	Section 10	Township 19S	Range 25E	Lot	Ft. from N/S 2205 FSL	Ft. from E/W 50 FWL	Latitude 32.6743130°N	Longitude 104.4813166°W	County EDDY
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Dedicated Acres 320	Infill or Defining Well INFILL	Defining Well API 30-015-55195	Overlapping Spacing Unit (Y/N) N	Consolidation Code F & C
Order Numbers. FP: R-24296 CA: PENDING			Well setbacks are under Common Ownership: ☐ Yes ☐ No NA	

Kick Off Point (KOP)

UL L	Section 11	Township 19S	Range 25E	Lot	Ft. from N/S 1982 FSL	Ft. from E/W 124 FWL	Latitude 32.6734700°N	Longitude 104.4636260°W	County EDDY
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First Take Point (FTP)

UL I	Section 10	Township 19S	Range 25E	Lot	Ft. from N/S 2205 FSL	Ft. from E/W 100 FEL	Latitude 32.6740929°N	Longitude 104.4643502°W	County EDDY
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Last Take Point (LTP)

UL L	Section 10	Township 19S	Range 25E	Lot	Ft. from N/S 2205 FSL	Ft. from E/W 100 FWL	Latitude 32.6743108°N	Longitude 104.4811541°W	County EDDY
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Unitized Area or Area of Uniform Interest PENDING CA	Spacing Unit Type ☒ Horizontal ☐ Vertical	Ground Floor Elevation: 3462' GL
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OPERATOR CERTIFICATIONS <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i> <i>If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.</i> Sarah Savino 02/06/2026		SURVEYOR CERTIFICATIONS <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me under my supervision, and that the same is true and correct to the best of my belief.</i> 	
Signature _____ Date _____		Signature and Seal of Professional Surveyor _____	
Printed Name SSAVINO@SPURENERGY.COM		Certificate Number 14400	Date of Survey 01/06/2026
Email Address _____			

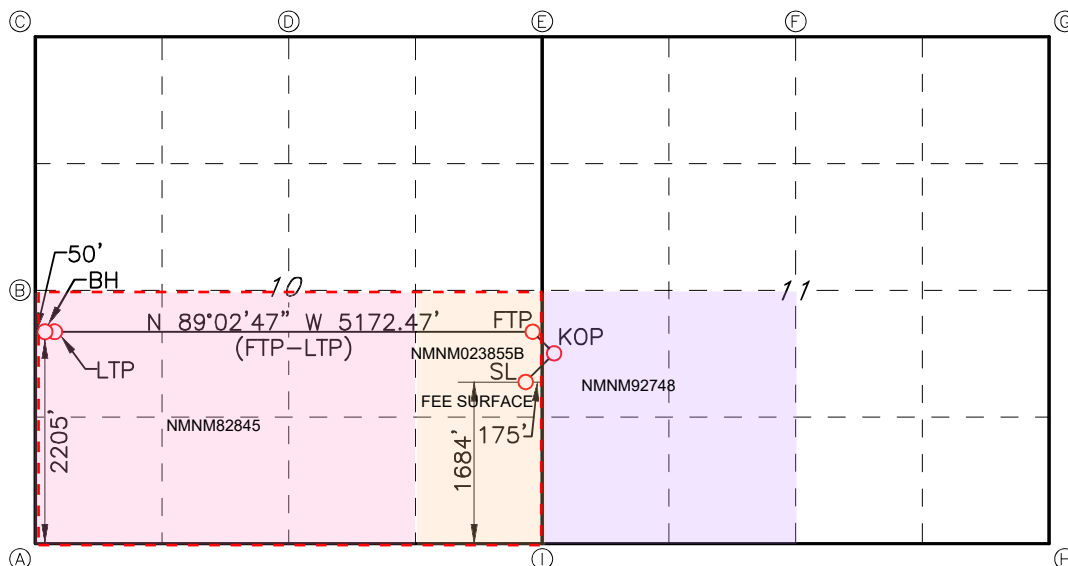
Note: No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

ACREAGE DEDICATION PLATS

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is a directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.

POLO AOP FEDERAL COM #10H

GEODETTIC DATA

NAD 83 GRID — NM EAST

SURFACE LOCATION (SL)

1684' FSL & 175' FEL SEC.10
N: 608471.3 — E: 500946.0

LAT: 32.6726642° N
LONG: 104.4646007° W

KICK OFF POINT (KOP)

1982' FSL & 124' FWL SEC.11
N: 608764.1 — E: 501246.3

LAT: 32.6734700° N
LONG: 104.4636260° W

FIRST TAKE POINT (FTP)

2205' FSL & 100' FEL SEC.10
N: 608991.0 — E: 501023.8

LAT: 32.6740929° N
LONG: 104.4643502° W

LAST TAKE POINT (LTP)

2205' FSL & 100' FWL SEC.10
N: 609077.0 — E: 495853.3

LAT: 32.6743108° N
LONG: 104.4811541° W

BOTTOM HOLE LOCATION (BH)

2205' FSL & 50' FWL SEC.10
N: 609077.9 — E: 495803.3

LAT: 32.6743130° N
LONG: 104.4813166° W

CORNER DATA

NAD 83 GRID — NM EAST

A: FOUND 3/8" REBAR
N: 606875.7 — E: 495832.6

B: FOUND 1/2" REBAR
N: 609617.4 — E: 495734.0

C: FOUND MOUND OF STONES
N: 612266.3 — E: 495736.5

D: FOUND MOUND OF STONES
N: 612218.7 — E: 498438.8

E: FOUND 1-1/2" PIPE
N: 612168.4 — E: 501140.0

F: FOUND 1" BOLT
N: 612088.5 — E: 503739.5

G: FOUND 1/2" REBAR
N: 612008.3 — E: 506339.4

H: FOUND BOLT
N: 606691.2 — E: 506353.0

I: FOUND 1/2" REBAR
N: 606784.8 — E: 501112.4



Spur Energy Partners LLC – Polo AOP Federal Com 10H

1. Geologic Formations

TVD of Target	2,675'
MD at TD	8,071'

Formation	Depth	Lithology	Expected Fluids
Quaternary	0'	Dolomite, Other: Caliche	Useable Water
Grayburg	445'	Dolomite, Sandstone, Anhydrite	Natural Gas, Oil
Top San Andres	825'	Dolomite, Limestone	Natural Gas, Oil
Middle San Andres	1125'	Dolomite, Limestone	Natural Gas, Oil
Lower San Andres	1815'	Dolomite, Limestone	Natural Gas, Oil
Glorieta	2425'	Dolomite, Siltstone	Natural Gas, Oil
Paddock	2535'	Dolomite, Limestone	Natural Gas, Oil
Blinberry	3145'	Dolomite, Siltstone	Natural Gas, Oil

*H₂S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Casing Formation Set Interval	Hole Size (in)	Casing Interval		Csg. Size (in)	Weight (lbs)	Grade	Conn.	SF	SF Burst	Body SF	Joint SF
		From (ft)	To (ft)					Collapse		Tension	Tension
San Andres	12.25	0	1250	9.625	36	J-55	BTC	1.125	1.2	1.4	1.4
N/A	8.75	0	3150	7	32	L-80	GBCD	1.125	1.2	1.4	1.4
Yeso	8.75	3150	8071	5.5	20	L-80	GBCD	1.125	1.2	1.4	1.4
SF Values will meet or Exceed											

Spur Energy Partners LLC – Polo AOP Federal Com 10H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N/A
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing String	Top (ft)	Bottom (ft)	% Excess
Surface (Lead)	0	950	50%
Surface (Tail)	950	1250	100%
Production (Lead)	0	2150	100%
Production (Tail)	2150	8071	25%

Casing String	# Sks	Wt. (lb/gal)	Yld (ft3/sack)	H2O (gal/sk)	500# Comp. Strength (hours)	Slurry Description
Surface (Lead)	204	12	2.4	13.48	8:12	Clas C Premium Plus Cement
Surface (Tail)	111	13.2	1.87	9.92	6:59	Clas C Premium Plus Cement
Production (Lead)	198	11.4	2.42	15.29	N/A	Clas C Premium Plus Cement
Production (Tail)	1120	13.2	1.56	9.81	N/A	Clas C Premium Plus Cement

Spur Energy Partners LLC – Polo AOP Federal Com 10H

4. Pressure Control Equipment

Spur Energy Partners LLC variance for flex hose

Spur requests a variance to use a flex line from the BOP to the choke manifold. Documentation will be attached in the APD and be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no bends).

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12.25" Hole	13-5/8"	5M	Annular	✓	70% of working pressure
		5M	Blind Ram	✓	250 psi / 3000 psi
			Pipe Ram	✓	
			Double Ram		
			Other*		
8.75" Hole	13-5/8"	5M	Annular	✓	70% of working pressure
		5M	Blind Ram	✓	250 psi / 3000 psi
			Pipe Ram	✓	
			Double Ram		
			Other*		

Spur Energy Partners LLC will be utilizing a 5M BOP

Condition	Specify what type and where?
BH Pressure at deepest TVD	1311 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	103°F

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Formation integrity test will be performed per Onshore Order #2.
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Spur Energy Partners LLC – Polo AOP Federal Com 10H

	On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	Are anchors required by manufacturer?
	A conventional wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. See attached schematics.

5. BOP Break Testing Request

Spur Energy Partners LLC requests permission to adjust the BOP break testing requirements as follows:

BOP break test under the following conditions:

- After a full BOP test is conducted
- When skidding to drill the production section, where the surface casing point is shallower than the 3 Bone Spring or 10,000 TVD.
- When skidding to drill a production section that does not penetrate the 3rd Bone Spring or deeper.

If the kill line is broken prior to skid, four tests will be performed.

- 1) The void between the wellhead and the spool (this consists of two tests)
- 2) The spool between the kill lines and the choke manifold (this consists of two tests)

If the kill line is not broken prior to skid, two tests will be performed.

- 1) The void between the wellhead and the pipe rams

6. Mud Program

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Spur will use a closed mud system.

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	1250	Water-Based Mud	8.6-8.9	32-36	N/C
1250	8071	Water-Based Mud	8.6-8.9	32-36	N/C

What will be used to monitor the loss or gain of fluid?	PVT/PASON/Visual Monitoring
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Spur Energy Partners LLC – Polo AOP Federal Com 10H

7. Logging and Testing Procedures

Logging, Coring and Testing.		
Yes	Will run GR from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.	
No	Logs are planned based on well control or offset log information.	
No	Drill stem test? If yes, explain	
No	Coring? If yes, explain	
Additional logs planned		Interval
No	Resistivity	
No	Density	
No	CBL	
Yes	Mud log	SCP - TD
No	PEX	

8. Drilling Conditions

Pump high viscosity sweeps as needed for hole cleaning. The mud system will be monitored visually/manually as well as with an electronic PVT. The necessary mud products for additional weight and fluid loss control will be on location at all times. Appropriately weighted mud will be used to isolate potential gas, oil, and water zones until such time as casing can be cemented into place for zonal isolation.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H ₂ S is present
Y	H ₂ S Plan attached

Total estimated cuttings volume: 782.5 bbls.

Spur Energy Partners LLC – Polo AOP Federal Com 10H**9. Other facets of operation**

	Yes/No
Will more than one drilling rig be used for drilling operations? If yes, describe. Spur Energy Partners LLC. requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Spur Energy Partners LLC. would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.	Yes

Attachments

- ☒ Directional Plan
☒ H2S Contingency Plan
☒ Akita 57 Attachments
☒ BOP Schematics
☒ Transcend Spudder Rig Attachments

10. Company Personnel

Name	Title	Office Phone	Mobile Phone
Christopher Hollis	D&C Manager	832-930-8629	713-380-7754
Ryan Barber	Senior D&C Engineer	832-930-8502	832-544-9267
Johnny Nabors	EVP Operations	832-930-8502	281-904-8811



GB Connection Performance Properties Sheet

Rev. 1 (08/25/2015)

ENGINEERING THE RIGHT CONNECTIONS™

Casing: 5.5 OD, 20 ppf
Casing Grade: L-80

Connection: GB CD Butt 6.300
Coupling Grade: API L-80

PIPE BODY GEOMETRY					
Nominal OD (in.)	5 1/2	Wall Thickness (in.)	0.361	Drift Diameter (in.)	4.653
Nominal Weight (ppf)	20.00	Nominal ID (in.)	4.778	API Alternate Drift Dia. (in.)	N/A
Plain End Weight (ppf)	19.83	Plain End Area (in. ²)	5.828		

PIPE BODY PERFORMANCE					
Material Specification	L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Collapse		Tension		Pressure	
API (psi)	8,830	Pl. End Yield Str. (kips)	466	Min. Int. Yield Press. (psi)	9,190
High Collapse (psi)	10,630	Torque		Bending	
		Yield Torque (ft-lbs)	54,120	Build Rate to Yield (°/100 ft)	66.7

GB CD Butt 6.300 COUPLING GEOMETRY					
Coupling OD (in.)	6.300	Makeup Loss (in.)	4.2500		
Coupling Length (in.)	8.500	Critical Cross-Sect. (in. ²)	8.527		

GB CD Butt 6.300 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Tension		Efficiency		Bending	
Thread Str. (kips)	503	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	58.2
Min. Tension Yield (kips)	648	External Pressure (%)	100%	Yield Torque	
Min. Tension Ult. (kips)	770	Tension (%)	100%	Yield Torque (ft-lbs)	22,680
Joint Str. (kips)	503	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.46		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	8,620	Max. MU Tq. (ft-lbs)	17,240	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	21,540

Units: US Customary (lbm, in., °F, lbf)

1 kip = 1,000 lbs

* See Running Procedure for description and limitations.

See attached: Notes for GB Connection Performance Properties.

GBT Running Procedure (GBT RP): www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdfBlanking Dimensions: www.gbconnections.com/pdf/GB-DWC-Blanking-Dimensions.pdf

Connection yield torque rating based on physical testing or extrapolation therefrom



Notes for GB Connections Performance Properties

Rev. 1 (May, 2018)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur with heavy wall casing), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Connections' Running Procedures (www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf).
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Connections, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application. Please visit www.gbconnections.com to download.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

OVERVIEW

This field running procedure applies to makeup of **GB Drilling with Casing** (GB DwC) Connections which include GB CD, GB CDE, GB RDB, GB EHTQ, and GB RDB WS Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All GBC Connections are suitable for **Running** (standard casing applications), **Rotating** (to aid string advancement), **Drilling** (Drilling with Casing/Drilling with Liners) and **Driving**. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, hooked ends, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (type, amount, and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, condition, orientation, location, contact area, and grip distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment.

This procedure has been designed to determine the **Running Torque** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled.

LIMITATIONS

This GBC Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run. GB DwC Connections require the proper amount and distribution of thread compound to **all pin and coupling threads** and careful field makeup in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.

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DEFINITIONS

1. **Minimum Makeup (MU) Torque:** Connections must have at least this amount of torque applied and clearly exhibit shoulder engagement.
2. **Shoulder Torque:** MU torque required to achieve shoulder engagement.
3. **Running Torque:** Developed at start of casing run per GBC Running Procedure and once established, used for the rest of the joints in the string, using data established with progression of the casing run. The **Running Torque** may be adjusted during the casing run as needed to stay within parameters defined here. The **Running Torque** will likely vary with each job due to the factors listed in the Overview section.
4. **Delta Torque:** Difference between **Shoulder Torque** and final makeup (or dump) torque.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007 Rev. 14 (04/09/2020)
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5. Maximum Makeup (MU) Torque: Final assembly torque including shoulder engagement shall not exceed the **Maximum MU Torque** shown on size, weight, and grade-specific GB Performance Property Sheets at the beginning of a casing run when establishing the **Running Torque**. In the unlikely event that **Running Torque** determined by the procedure meets or exceeds the **Maximum MU Torque**, call GB Connections for assistance.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). **Yield Torque** rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points. **Yield Torque** values for the pipe body and connection are based on nominal dimensions and minimum material yield strength.
7. Maximum Operating Torque: The **Maximum Operating Torque** shown on the GB Connections Performance Property Sheets includes a 5% safety factor on **Yield Torque**. As such, it represents the **limiting torque spike** that can be applied to the connection during rotating operations. The **Maximum Operating Torque** is **NOT** the **Maximum MU Torque** and is **NOT** a sustainable rotating torque. Operating at the **Maximum Operating Torque** for any length of time may damage connections due to likely random, unexpected torque spikes that occur during rotating operations. USER should carefully consider this value to determine if a higher Safety Factor on **Yield Torque** is more suitable for the project-specific application.

As a general rule of thumb, rotating RPMs and Torque should be "walked up" to determine the minimum needed for task accomplishment. Additional information on best practices for rotating casing can be found at <http://www.gbconnections.com/pdf/White-Paper-Rotating-Casing.pdf>.

KEY INFORMATION

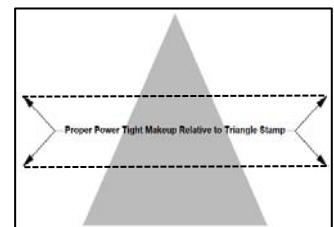
Thread Compound: Best-O-Life 2000, Best-O-Life 2000 Arctic Grade (AG), API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope". User should avoid products that include Metal Free (MF) in the product name. Tool joint compounds are **expressly forbidden** for makeup of any GBC Connections. Thread compound shall be applied to all pin and box threads as described here.

Torque Values: **Minimum and Maximum MU Torque** values are provided on individual GB Connections Performance Property Sheets available at the following link:
http://www.gbconnectionss.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS.**

Pin Nose Engagement: Pin nose engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately the **middle third of the API Triangle Stamp** on the pin (see graphic). The triangle will be stamped on the pin member as indicated by a white locator stripe.



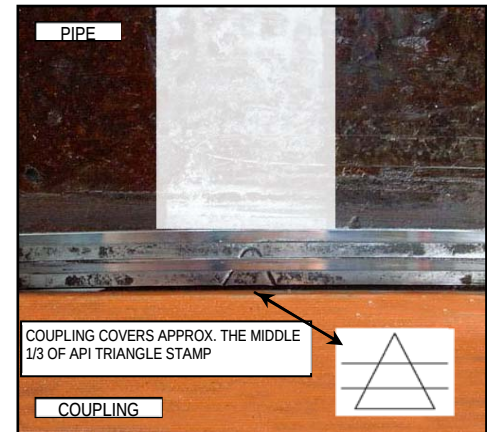
Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a: (1) **Delta Torque** ranging between 10% and 50% of majority of the

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

Shoulder Torque and (2) final torque not exceeding the **Running Torque** as established in this procedure. Outlier joints that require additional attention would be an exception to **Maximum MU Torque** limit as discussed under Comments, Troubleshooting.

It is imperative that the following procedure be executed carefully at the beginning of every casing run to determine the **Running Torque** (torque to be used for the rest of the string). Torque values established on an individual casing run are never transferrable to other runs.

The **Running Torque** is determined while running the first 10 joints after joints assembled with threadlocking compounds are made up. Sometimes more than the first 10 joints will be needed to establish the **Running Torque** due to erratic results and/or other run-specific conditions. The **Running Torque** may have to be re-established or adjusted during the casing run under certain conditions¹ and observations. Use the size-specific GBC Connections Performance Property Sheets (http://www.gbconnections.com/connection_selector.php) for physical properties for the **Minimum** and **Maximum MU Torque** values.



Connections shall be made up until shoulder engagement with **Delta Torque** between 10% and 50% of the **Shoulder Torque** (not to exceed the **Maximum MU Torque**, see procedure below) using the **Running Torque** value established in this procedure. The **Maximum MU Torque** at the beginning of the casing run for establishing the **Running Torque** shall be limited to the value shown on the applicable GBC Connections Performance Property Sheet. The **Running Torque** shall be used thereafter and throughout the run as the limiting makeup torque value. The **Maximum MU Torque** on the GBC Performance Property Sheet value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Connections if more than the **Maximum MU Torque** value is required for shoulder engagement and/or final makeup, or if torque exceeding the **Maximum Operating Torque** value is required for the intended service.

PROCEDURE FOR ESTABLISHING **RUNNING TORQUE**

1. Remove coupling thread protectors only after casing is set in V-Door.
2. **Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; **add fresh compound to pin threads and pin nose.**
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus **Delta Torque**. Record the **Shoulder Torque** observed for the first 10 joints (excluding threadlocked accessory joints). The **Running Torque** is (a) the **Minimum MU Torque** shown on the GB Connections Performance Property Sheets **or** (b) the **Maximum Shoulder Torque** recorded from the first 10 makeups + 10%, **whichever is higher** (rounded to the next highest 500 ft-lbs.) **Delta Torque** should be between 10% and 50% of the **Shoulder Torque**. **Running Torque** shall not exceed the **Maximum**

¹ Examples include but are not limited to more than an occasional low or high **Delta Torque**, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

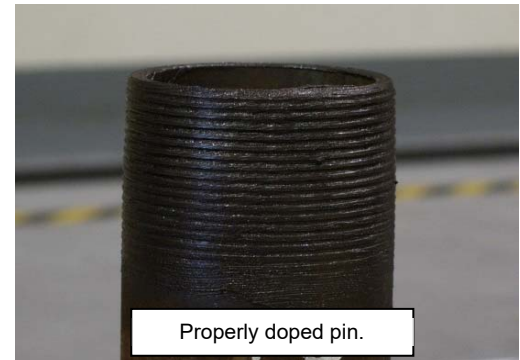
	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

MU Torque. When making up the initial joints for establishing the **Running Torque** carefully watch the torque gauge for the **Shoulder Torque** and try to manually shut down the tongs before reaching **Maximum MU Torque** shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to 80% of the **Maximum MU Torque** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the **"Running Torque"** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established **Running Torque** is achieved.
7. All connections made up with the established **Running Torque** should achieve shoulder engagement with the small amount of **Delta Torque**. Carefully watch for the spike on the torque gauge during each make up to verify shoulder engagement. As a **secondary** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers the middle 1/3 of the API Triangle Stamp on the pin (see accompanying photo).
8. All connections should achieve shoulder engagement with at least 10% **Delta Torque** before the **Maximum MU Torque** is achieved.

COMMENTS, TROUBLESHOOTING

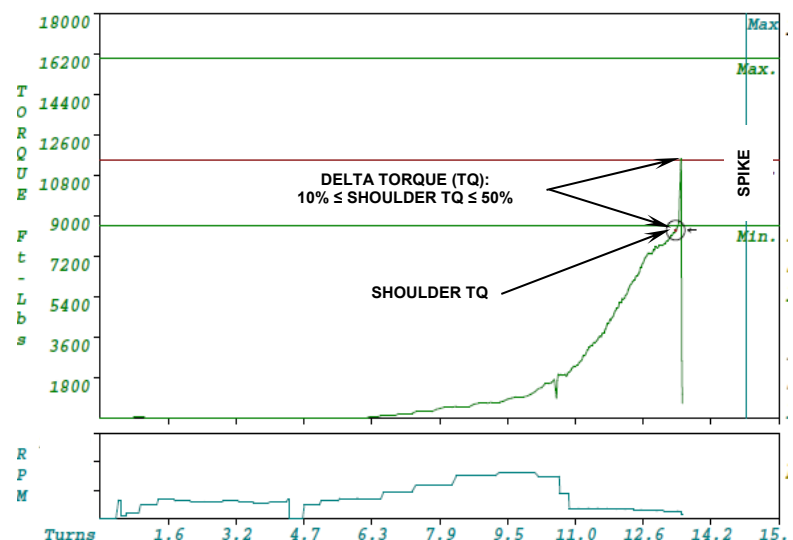
1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND OPPOSING PIN NOSE OR SHOULDER AREA OF EVERY CONNECTION.** Thread compound "transfer" between pin and coupling will not provide proper sealing mechanism for the connection to function properly. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS.** The thread form should be discernible beneath the compound, i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where **excessive** amounts are squeezed out during assembly. Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.
2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. **Clean thread protectors** shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the **"Running Torque"** value determined by this procedure. Any connection that does not achieve shoulder engagement at the established **"Running Torque"** value shall be visually inspected for position relative to the API Triangle Stamp.
 - a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.



	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007 Rev. 14 (04/09/2020)
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- b) If the coupling covers the API Triangle base but does not land in approximately the middle third of the API Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. Except to initiate connection turning, it is common to see high torque (possibly exceeding the **Maximum MU Torque**) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).
- c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.
4. At the established **Running Torque**, the connections will generally shoulder with **Delta Torque** between 10% and 50%. High interference connections will tend to have a higher **Shoulder Torque** and less **Delta Torque** (at least 10% of the **Shoulder Torque** is required). Low interference connections will tend to have lower **Shoulder Torque** and more **Delta Torque**. In general, GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new **Running Torque** should be adjusted as described below.

If a connection appears to have shouldered but doesn't have at least 10% **Delta Torque**, the position relative to the API Triangle Stamp should be checked. In just about every instance, the position will have covered the triangle base, so additional torque can be added to complete the makeup as discussed in 3.b) above. Expect an instantaneous spike with showing more than 50% **Delta Torque** with application of additional torque. Under this condition, this makeup is acceptable.



Similarly, random connections here and there with more than 50% **Delta Torque** is generally not cause for concern. However, if overshooting the 50% maximum **Delta Torque** target occurs frequently, then the established **Running Torque** value should be walked down in 500 ft-lbs. to 1,000 ft-lbs. increments until connection makeup routinely falls in line with the stated acceptance criteria.

5. **Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"² when compared with most plots from previous good makeups should be checked carefully.

² An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft-lbs. or 10% of the minimum makeup torque (whichever is lower) to help normalize the turns-to-power-tight variability in the Tq-Tn graphs. Setting a reference torque reduces field stab variability resulting in more consistency in the Tq-Tn data. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (15 turns will usually be sufficient at the start and can be reduced based on data from the first few joints).

UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA.

6. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than $\frac{1}{2}$ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than $\frac{1}{2}$ turn, trouble-shooting should be initiated. Pay particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. Counting turns can help to estimate if coupling will need to be stopped to avoid over rotation. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
7. A double wrap of the pick-up sling should be used when raising casing into the derrick when lifting subs, single joint, side-door, or slip elevators are not being used.
8. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
9. Manual and automated dump valves can overshoot the established **Running Torque** due to several factors. Slightly overshooting the **Running Torque** is not cause for concern as long as the final "dump" torque is not excessive, and the equipment used is generally consistent joint-to-joint. Overshooting the **Running Torque** with a final makeup speed greater than 10 RPMs is risky and potentially harmful to the connection as discussed below.
10. Attached is a "Worksheet for determining GB Connections **Running Torque** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

MAKEUP SPEED

To reiterate: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) FULL TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMs.** Be sure that the final 2 turns occur after the tong speed has slowed completely to less than 6 RPMs.

Making up connections at RPM exceeding those listed above may result in unsatisfactory connection performance downhole. Risks associated with excessive makeup RPMs are common for any connection with internal pin nose engagement. High speed makeup can:

1. Impart an unnecessary impulse load at nose contact. Certain materials are more susceptible to cracking under sudden or instantaneously applied loads.
2. Inhibit efficient movement of and trap thread compound under high pressure causing additional and unquantifiable high hoop stresses in the connection.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

3. Result in significant overshoot of established dump torque value due to equipment latency between signal and equipment shut down resulting in higher but unknown actual final torque value. Excessive overshoot can result in pin nose yielding.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the **Maximum MU Torque** (shown on GB Connections Performance Property Sheets). Carefully watch for and note the **Shoulder Torque**.
4. Record **Shoulder Torque** and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The **Running Torque** is (a) the **Minimum MU Torque** shown on the GB Connections Performance Property Sheet or (b) the maximum torque required for shoulder engagement + 10% **Delta Torque** determined from the first 10 makeups, whichever is higher. Use the attached Worksheet to record this data and determine the **Running Torque**.
6. Make up the rest of the string at the **Running Torque** determined in the previous step verifying each connection has shouldered with between 10% and 50% **Delta Torque**. Small incremental adjustments to the established Running Torque (500 to 1,000 ft-lbs) are advised if delta torques routinely fall short of the 10% requirement or routinely exceed the 50% requirement.

NOTES:

- This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.
- Does not apply to threadlock connections.

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the **Running Torque** in accordance with GB Procedures.
4. **DO** make adjustments to **Running Torque** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum **Delta Torque** $\geq 10\%$ of the **Shoulder Torque**.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

10. **DO** make note of anything that occurs with any connection makeup such as backup grips slipped, connection inspected and remade, etc.
11. **Do** check out every connection that appears out of character relative to the population. An example would be a connection that is completed with significantly fewer turns than most others. Check the triangle stamp and record position and take corrective action if needed.
12. **DO** add torque to any connection that appears to achieve pin nose engagement but not 10% delta torque.
13. **DO** adjust the **Running Torque** up or down in increments to achieve consistent **Delta Torque** between 10% and 50%.
14. **Do** make note of any anomaly during any connection makeup, such as backups slipped, mill side turned, etc.
15. **DO** minimize the weight on the connection, i.e. weight neutral, during break out as much as possible to minimize thread galling.
16. **DO NOT** over dope.
17. **DO NOT** exceed the **Maximum MU Torque** as shown on the GB Connections Performance Property Sheets during assembly.
18. **DO NOT** make up any misaligned connection.
19. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear for the final two (2) full turns.
20. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
21. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
22. **DO NOT** hesitate to contact GB Connections with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbconnections.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus Delta Torque. Record the Shoulder Torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum MU Torque shown on the GB Connections Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft-lbs.) Delta Torque should be between 10% and 50% of the Shoulder Torque. Running Torque shall not exceed the Maximum MU Torque. When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the Shoulder Torque and try to manually shut down the tongs before reaching Maximum MU Torque shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to **80% of the Maximum MU Torque** during this initial process.
6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GBC Performance Property Sheet
Weight (ppf)		See GBC Performance Property Sheet
Grade		See GBC Performance Property Sheet
Min MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is NOT the Maximum Makeup Torque and is NOT a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch ()
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)		-	A or B, whichever is greater.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

GB Connections

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Houston TX 77079
Toll Free: 1-888-245-3848
Main: 713-465-3585
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GB Connection Performance Properties Sheet

Rev. 2 (07/11/2017)

ENGINEERING THE RIGHT CONNECTIONS

Casing: 7 OD, 32 ppf
Casing Grade: L-80

Connection: GB CD Butt 7.875
Coupling Grade: API L-80

PIPE BODY GEOMETRY					
Nominal OD (in.)	7	Wall Thickness (in.)	0.453	Drift Diameter (in.)	5.969
Nominal Weight (ppf)	32.00	Nominal ID (in.)	6.094	API Alternate Drift Dia. (in.)	6.000
Plain End Weight (ppf)	31.70	Plain End Area (in. ²)	9.317		

PIPE BODY PERFORMANCE					
Material Specification	L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Collapse		Tension		Pressure	
API (psi)	8,600	Pl. End Yield Str. (kips)	745	Min. Int. Yield Press. (psi)	9,060
High Collapse (psi)	10,400	Torque		Bending	
		Yield Torque (ft-lbs)	110,320	Build Rate to Yield (°/100 ft)	52.4

GB CD Butt 7.875 COUPLING GEOMETRY					
Coupling OD (in.)	7.875	Makeup Loss (in.)	4.6250		
Coupling Length (in.)	9.250	Critical Cross-Sect. (in. ²)	11.894		

GB CD Butt 7.875 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Tension		Efficiency		Bending	
Thread Str. (kips)	791	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	46.6
Min. Tension Yield (kips)	904	External Pressure (%)	100%	Yield Torque	
Min. Tension Ult. (kips)	1,073	Tension (%)	100%	Yield Torque (ft-lbs)	49,870
Joint Str. (kips)	791	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.28		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	10,000	Max. MU Tq. (ft-lbs)	20,000	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	47,380

Units: US Customary (lbm, in., °F, lbf)

1 kip = 1,000 lbs

* See Running Procedure for description and limitations.

See attached: Notes for GB Connection Performance Properties.

GBC Running Procedure (GBC RP): www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdfBlanking Dimensions: www.gbconnections.com/pdf/GB-DWC-Blanking-Dimensions.pdf

Connection yield torque rating based on physical testing or extrapolation therefrom

Notes for GB Connections Performance Properties

Rev. 1 (May, 2018)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur with heavy wall casing), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Connections' Running Procedures (www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf).
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Connections, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application. Please visit www.gbconnections.com to download.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

OVERVIEW

This field running procedure applies to makeup of **GB Drilling with Casing** (GB DwC) Connections which include GB CD, GB CDE, GB RDB, GB EHTQ, and GB RDB WS Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All GBC Connections are suitable for **Running** (standard casing applications), **Rotating** (to aid string advancement), **Drilling** (Drilling with Casing/Drilling with Liners) and **Driving**. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, hooked ends, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (type, amount, and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, condition, orientation, location, contact area, and grip distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment.

This procedure has been designed to determine the **Running Torque** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled.

LIMITATIONS

This GBC Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run. GB DwC Connections require the proper amount and distribution of thread compound to **all pin and coupling threads** and careful field makeup in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.

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DEFINITIONS

1. **Minimum Makeup (MU) Torque:** Connections must have at least this amount of torque applied and clearly exhibit shoulder engagement.
2. **Shoulder Torque:** MU torque required to achieve shoulder engagement.
3. **Running Torque:** Developed at start of casing run per GBC Running Procedure and once established, used for the rest of the joints in the string, using data established with progression of the casing run. The **Running Torque** may be adjusted during the casing run as needed to stay within parameters defined here. The **Running Torque** will likely vary with each job due to the factors listed in the Overview section.
4. **Delta Torque:** Difference between **Shoulder Torque** and final makeup (or dump) torque.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

5. Maximum Makeup (MU) Torque: Final assembly torque including shoulder engagement shall not exceed the **Maximum MU Torque** shown on size, weight, and grade-specific GB Performance Property Sheets at the beginning of a casing run when establishing the **Running Torque**. In the unlikely event that **Running Torque** determined by the procedure meets or exceeds the **Maximum MU Torque**, call GB Connections for assistance.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). **Yield Torque** rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points. **Yield Torque** values for the pipe body and connection are based on nominal dimensions and minimum material yield strength.
7. Maximum Operating Torque: The **Maximum Operating Torque** shown on the GB Connections Performance Property Sheets includes a 5% safety factor on **Yield Torque**. As such, it represents the **limiting torque spike** that can be applied to the connection during rotating operations. The **Maximum Operating Torque** is **NOT** the **Maximum MU Torque** and is **NOT** a sustainable rotating torque. Operating at the **Maximum Operating Torque** for any length of time may damage connections due to likely random, unexpected torque spikes that occur during rotating operations. USER should carefully consider this value to determine if a higher Safety Factor on **Yield Torque** is more suitable for the project-specific application.

As a general rule of thumb, rotating RPMs and Torque should be "walked up" to determine the minimum needed for task accomplishment. Additional information on best practices for rotating casing can be found at <http://www.gbconnections.com/pdf/White-Paper-Rotating-Casing.pdf>.

KEY INFORMATION

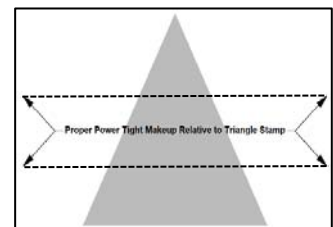
Thread Compound: Best-O-Life 2000, Best-O-Life 2000 Arctic Grade (AG), API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope". User should avoid products that include Metal Free (MF) in the product name. Tool joint compounds are **expressly forbidden** for makeup of any GBC Connections. Thread compound shall be applied to all pin and box threads as described here.

Torque Values: **Minimum and Maximum MU Torque** values are provided on individual GB Connections Performance Property Sheets available at the following link:
http://www.gbconnectionss.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS.**

Pin Nose Engagement: Pin nose engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately the **middle third of the API Triangle Stamp** on the pin (see graphic). The triangle will be stamped on the pin member as indicated by a white locator stripe.



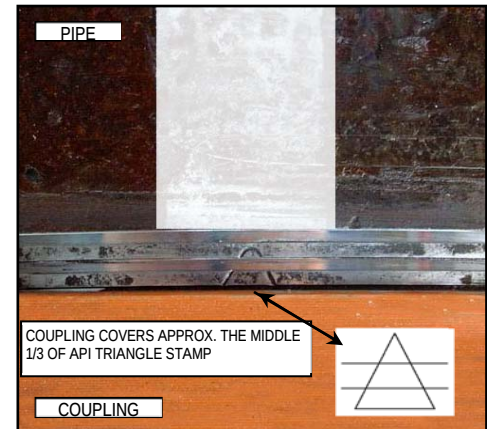
Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a: (1) **Delta Torque** ranging between 10% and 50% of majority of the

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

Shoulder Torque and (2) final torque not exceeding the **Running Torque** as established in this procedure. Outlier joints that require additional attention would be an exception to **Maximum MU Torque** limit as discussed under Comments, Troubleshooting.

It is imperative that the following procedure be executed carefully at the beginning of every casing run to determine the **Running Torque** (torque to be used for the rest of the string). Torque values established on an individual casing run are never transferrable to other runs.

The **Running Torque** is determined while running the first 10 joints after joints assembled with threadlocking compounds are made up. Sometimes more than the first 10 joints will be needed to establish the **Running Torque** due to erratic results and/or other run-specific conditions. The **Running Torque** may have to be re-established or adjusted during the casing run under certain conditions¹ and observations. Use the size-specific GBC Connections Performance Property Sheets (http://www.gbconnections.com/connection_selector.php) for physical properties for the **Minimum** and **Maximum MU Torque** values.



Connections shall be made up until shoulder engagement with **Delta Torque** between 10% and 50% of the **Shoulder Torque** (not to exceed the **Maximum MU Torque**, see procedure below) using the **Running Torque** value established in this procedure. The **Maximum MU Torque** at the beginning of the casing run for establishing the **Running Torque** shall be limited to the value shown on the applicable GBC Connections Performance Property Sheet. The **Running Torque** shall be used thereafter and throughout the run as the limiting makeup torque value. The **Maximum MU Torque** on the GBC Performance Property Sheet value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Connections if more than the **Maximum MU Torque** value is required for shoulder engagement and/or final makeup, or if torque exceeding the **Maximum Operating Torque** value is required for the intended service.

PROCEDURE FOR ESTABLISHING **RUNNING TORQUE**

1. Remove coupling thread protectors only after casing is set in V-Door.
2. **Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; **add fresh compound to pin threads and pin nose.**
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus **Delta Torque**. Record the **Shoulder Torque** observed for the first 10 joints (excluding threadlocked accessory joints). The **Running Torque** is (a) the **Minimum MU Torque** shown on the GB Connections Performance Property Sheets **or** (b) the **Maximum Shoulder Torque** recorded from the first 10 makeups + 10%, **whichever is higher** (rounded to the next highest 500 ft-lbs.) **Delta Torque** should be between 10% and 50% of the **Shoulder Torque**. **Running Torque** shall not exceed the **Maximum**

¹ Examples include but are not limited to more than an occasional low or high **Delta Torque**, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

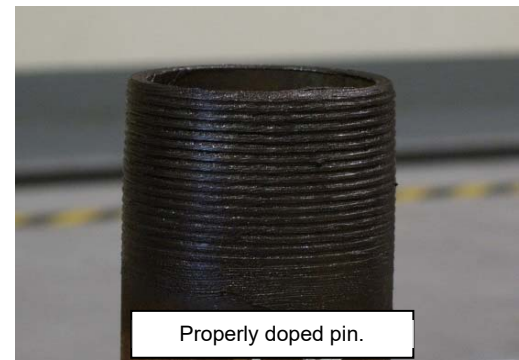
	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007 Rev. 14 (04/09/2020)
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MU Torque. When making up the initial joints for establishing the **Running Torque** carefully watch the torque gauge for the **Shoulder Torque** and try to manually shut down the tongs before reaching **Maximum MU Torque** shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to 80% of the **Maximum MU Torque** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the **"Running Torque"** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established **Running Torque** is achieved.
7. All connections made up with the established **Running Torque** should achieve shoulder engagement with the small amount of **Delta Torque**. Carefully watch for the spike on the torque gauge during each make up to verify shoulder engagement. As a **secondary** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers the middle 1/3 of the API Triangle Stamp on the pin (see accompanying photo).
8. All connections should achieve shoulder engagement with at least 10% **Delta Torque** before the **Maximum MU Torque** is achieved.

COMMENTS, TROUBLESHOOTING

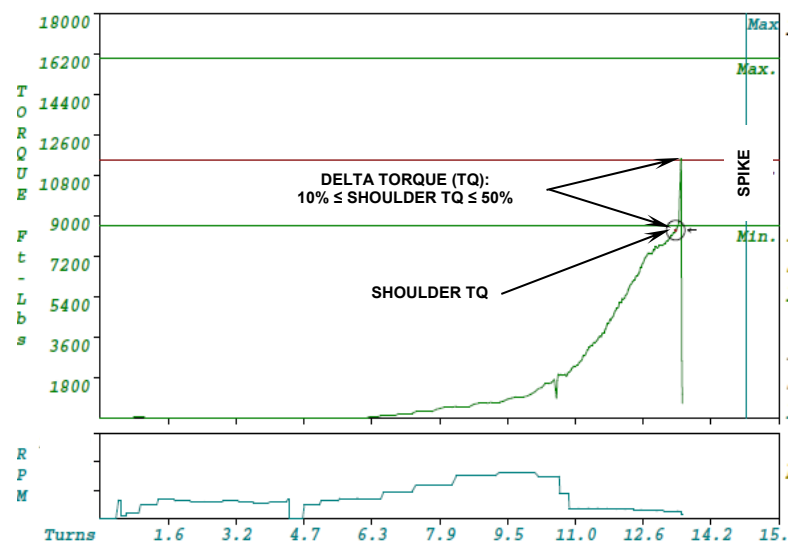
1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND OPPOSING PIN NOSE OR SHOULDER AREA OF EVERY CONNECTION.** Thread compound "transfer" between pin and coupling will not provide proper sealing mechanism for the connection to function properly. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS.** The thread form should be discernible beneath the compound, i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where **excessive** amounts are squeezed out during assembly. Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.
2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. **Clean thread protectors** shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the **"Running Torque"** value determined by this procedure. Any connection that does not achieve shoulder engagement at the established **"Running Torque"** value shall be visually inspected for position relative to the API Triangle Stamp.
 - a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.



	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007 Rev. 14 (04/09/2020)
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- b) If the coupling covers the API Triangle base but does not land in approximately the middle third of the API Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. Except to initiate connection turning, it is common to see high torque (possibly exceeding the **Maximum MU Torque**) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).
- c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.
4. At the established **Running Torque**, the connections will generally shoulder with **Delta Torque** between 10% and 50%. High interference connections will tend to have a higher **Shoulder Torque** and less **Delta Torque** (at least 10% of the **Shoulder Torque** is required). Low interference connections will tend to have lower **Shoulder Torque** and more **Delta Torque**. In general, GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new **Running Torque** should be adjusted as described below.

If a connection appears to have shouldered but doesn't have at least 10% **Delta Torque**, the position relative to the API Triangle Stamp should be checked. In just about every instance, the position will have covered the triangle base, so additional torque can be added to complete the makeup as discussed in 3.b) above. Expect an instantaneous spike with showing more than 50% **Delta Torque** with application of additional torque. Under this condition, this makeup is acceptable.



Similarly, random connections here and there with more than 50% **Delta Torque** is generally not cause for concern. However, if overshooting the 50% maximum **Delta Torque** target occurs frequently, then the established **Running Torque** value should be walked down in 500 ft-lbs. to 1,000 ft-lbs. increments until connection makeup routinely falls in line with the stated acceptance criteria.

5. **Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"² when compared with most plots from previous good makeups should be checked carefully.

² An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft-lbs. or 10% of the minimum makeup torque (whichever is lower) to help normalize the turns-to-power-tight variability in the Tq-Tn graphs. Setting a reference torque reduces field stab variability resulting in more consistency in the Tq-Tn data. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (15 turns will usually be sufficient at the start and can be reduced based on data from the first few joints).

UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA.

6. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than ½ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than ½ turn, trouble-shooting should be initiated. Pay particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. Counting turns can help to estimate if coupling will need to be stopped to avoid over rotation. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
7. A double wrap of the pick-up sling should be used when raising casing into the derrick when lifting subs, single joint, side-door, or slip elevators are not being used.
8. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
9. Manual and automated dump valves can overshoot the established **Running Torque** due to several factors. Slightly overshooting the **Running Torque** is not cause for concern as long as the final "dump" torque is not excessive, and the equipment used is generally consistent joint-to-joint. Overshooting the **Running Torque** with a final makeup speed greater than 10 RPMs is risky and potentially harmful to the connection as discussed below.
10. Attached is a "Worksheet for determining GB Connections **Running Torque** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

MAKEUP SPEED

To reiterate: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) FULL TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMs.** Be sure that the final 2 turns occur after the tong speed has slowed completely to less than 6 RPMs.

Making up connections at RPM exceeding those listed above may result in unsatisfactory connection performance downhole. Risks associated with excessive makeup RPMs are common for any connection with internal pin nose engagement. High speed makeup can:

1. Impart an unnecessary impulse load at nose contact. Certain materials are more susceptible to cracking under sudden or instantaneously applied loads.
2. Inhibit efficient movement of and trap thread compound under high pressure causing additional and unquantifiable high hoop stresses in the connection.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

3. Result in significant overshoot of established dump torque value due to equipment latency between signal and equipment shut down resulting in higher but unknown actual final torque value. Excessive overshoot can result in pin nose yielding.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the **Maximum MU Torque** (shown on GB Connections Performance Property Sheets). Carefully watch for and note the **Shoulder Torque**.
4. Record **Shoulder Torque** and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The **Running Torque** is (a) the **Minimum MU Torque** shown on the GB Connections Performance Property Sheet or (b) the maximum torque required for shoulder engagement + 10% **Delta Torque** determined from the first 10 makeups, whichever is higher. Use the attached Worksheet to record this data and determine the **Running Torque**.
6. Make up the rest of the string at the **Running Torque** determined in the previous step verifying each connection has shouldered with between 10% and 50% **Delta Torque**. Small incremental adjustments to the established Running Torque (500 to 1,000 ft-lbs) are advised if delta torques routinely fall short of the 10% requirement or routinely exceed the 50% requirement.

NOTES:

- This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.
- Does not apply to threadlock connections.

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the **Running Torque** in accordance with GB Procedures.
4. **DO** make adjustments to **Running Torque** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum **Delta Torque** $\geq 10\%$ of the **Shoulder Torque**.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.

	Running Procedure for Casing with GB Drilling with Casing Connections	October 29, 2007
		Rev. 14 (04/09/2020)

10. **DO** make note of anything that occurs with any connection makeup such as backup grips slipped, connection inspected and remade, etc.
11. **Do** check out every connection that appears out of character relative to the population. An example would be a connection that is completed with significantly fewer turns than most others. Check the triangle stamp and record position and take corrective action if needed.
12. **DO** add torque to any connection that appears to achieve pin nose engagement but not 10% delta torque.
13. **DO** adjust the **Running Torque** up or down in increments to achieve consistent **Delta Torque** between 10% and 50%.
14. **Do** make note of any anomaly during any connection makeup, such as backups slipped, mill side turned, etc.
15. **DO** minimize the weight on the connection, i.e. weight neutral, during break out as much as possible to minimize thread galling.
16. **DO NOT** over dope.
17. **DO NOT** exceed the **Maximum MU Torque** as shown on the GB Connections Performance Property Sheets during assembly.
18. **DO NOT** make up any misaligned connection.
19. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear for the final two (2) full turns.
20. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
21. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
22. **DO NOT** hesitate to contact GB Connections with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbconnections.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus Delta Torque. Record the Shoulder Torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum MU Torque shown on the GB Connections Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft-lbs.) Delta Torque should be between 10% and 50% of the Shoulder Torque. Running Torque shall not exceed the Maximum MU Torque. When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the Shoulder Torque and try to manually shut down the tongs before reaching Maximum MU Torque shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to **80% of the Maximum MU Torque** during this initial process.
6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GBC Performance Property Sheet
Weight (ppf)		See GBC Performance Property Sheet
Grade		See GBC Performance Property Sheet
Min MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is NOT the Maximum Makeup Torque and is NOT a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch ()
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)		-	A or B, whichever is greater.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

GB Connections

950 Threadneedle, Suite 130
Houston TX 77079
Toll Free: 1-888-245-3848
Main: 713-465-3585
Fax: 713-984-1529

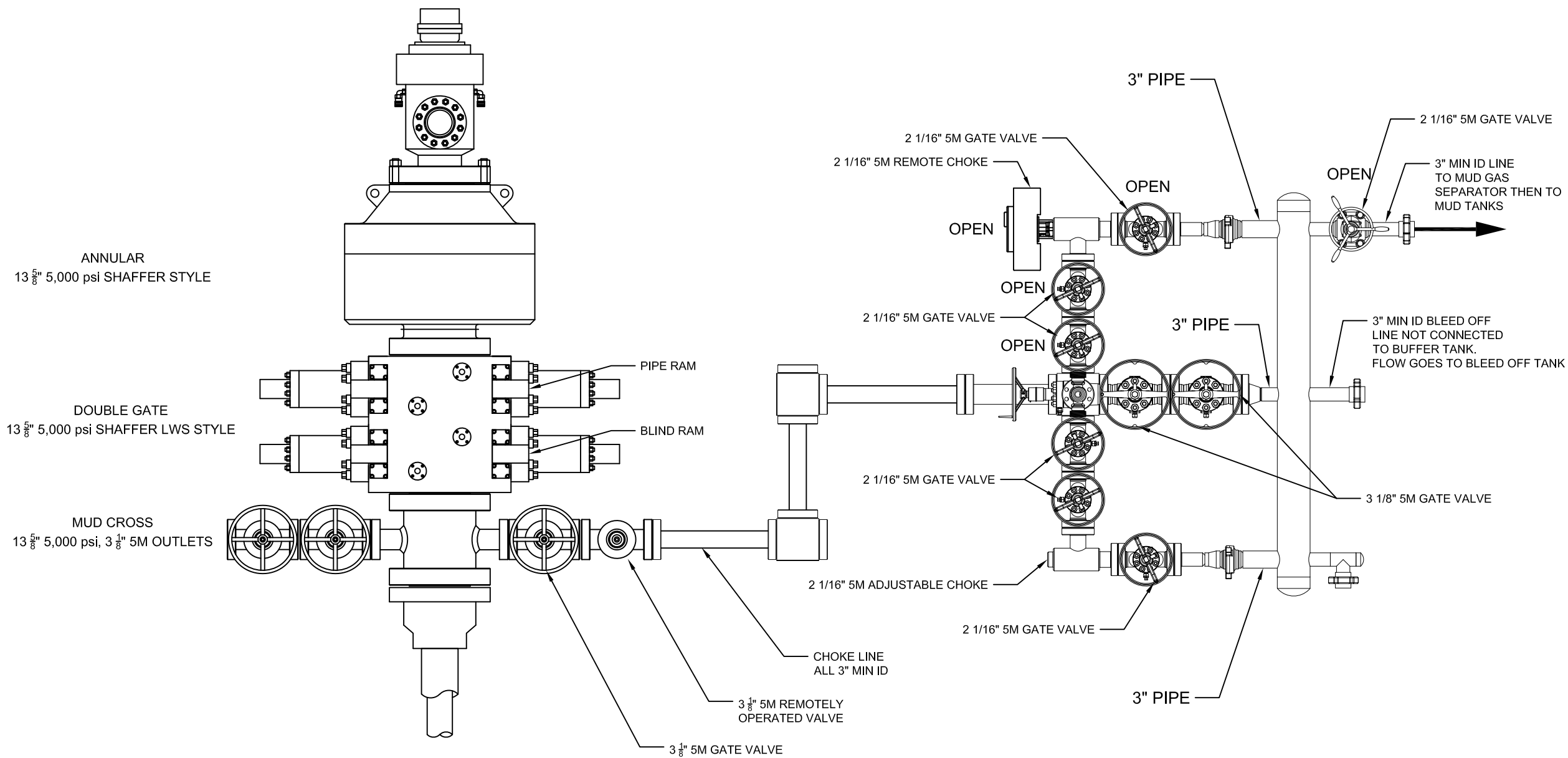
For Technical Information, contact:

Gene Mannella
gmannella@gbconnections.com

Jordan Kies
jkies@gbconnections.com

Qing Lu
qlu@gbconnections.com

Jonathan Garrett
jgarrett@gbconnections.com



Notes
-
-
-

No.	Revision	Date

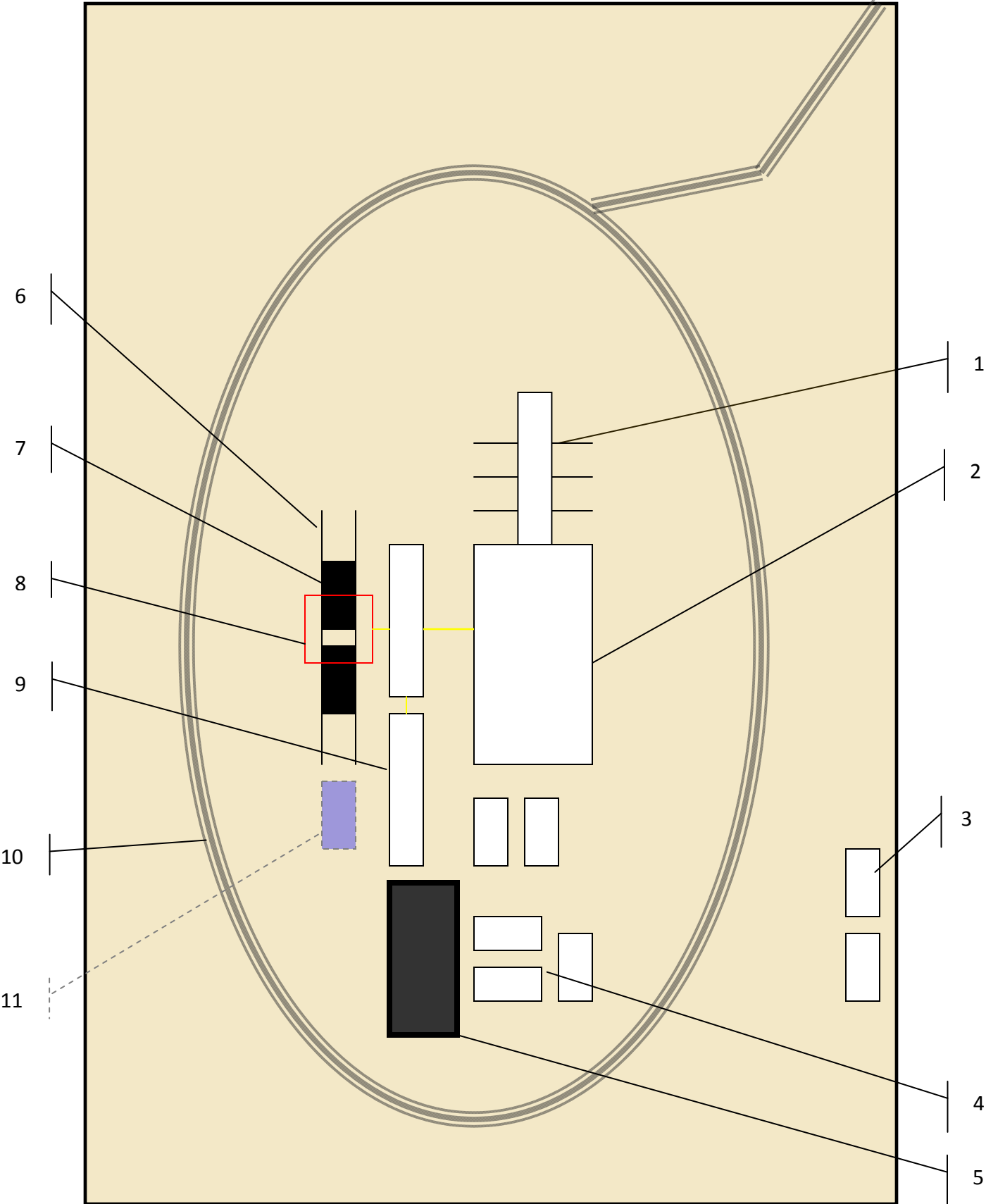


AKITA
DRILLING LTD.
2302 8th Street, Nisku Alberta
T9E 7Z2 Tel: (780) 955-6700

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Date	5-6-2021	Scale	NTS
Des / Chk'd By	BG	File Name	R57 13 5M dou..
Project	R57		

RIG 57 BOP SCHEMATIC



Schematic Closed Loop Drilling Rig*

- 1. Pipe Rack
- 2. Drill Rig
- 3. House Trailers/ Offices
- 4. Generator/Fuel/Storage
- 5. Overflow-Frac Tank
- 6. Skids
- 7. Roll Offs
- 8. Hopper or Centrifuge
- 9. Mud Tanks
- 10. Loop Drive
- 11. Generator (only for use with centrifuge)

*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available



Above: Centrifugal Closed Loop System

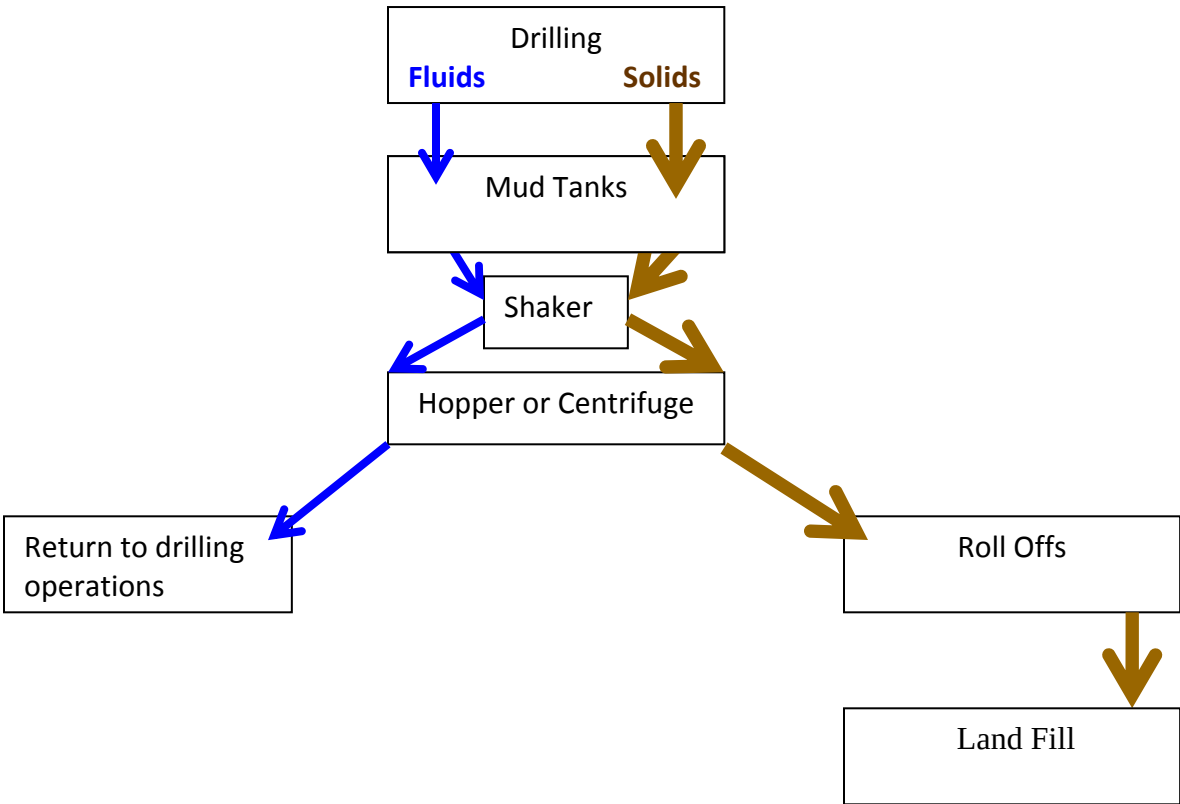


PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120



Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



Photos Courtesy of Gandy Corporation Oil
Field Service

TRANSCEND RIG 4	Contractor Specification
Make	Schram
Model	TXD 130
Year of Manufacture	2006
Truck Mounted	YES
Rated Drilling Depth	130,000# hook load
Rated Depth with Tubing	
Derrick Height	69' 9"
Derrick Type	Telescoping Hydraulic
Derrick Capacity	130,000#
Elevators	N/A
Drawworks	760 HP Detroit
Wire Diameter	Hydraulic
Workfloor Max Height	8'
Tongs	Hydraulic Iron Roughneck
Slips	Manual Slips
Included Tubing Handling Tools	• 13 3/8" handling tools
Included Rod Handling Tools	85jts of 4.5" drill pipe
BOP Class Compatibility	
Weight Indicator	Hydraulic
Rig Safety Equipment	Eye wash station, fire extengushers, wind sock
Pad Size Requirements/Limitations	60' x 60'
Guy Line Spacing	N/A
Other Supplied Rig Equipment	Standard Rig Hand Tools: • (2) 36" pipe wrenches • (2) 24" pipe wrenches • (2) 18" pipe wrenches • (1) 24" crescent wrench • (2) 12" crescent wrenches • (1) 4 lb shop hammer • (1) 12 lb sledge hammer • (1) 4 foot pry bar • Vehicles for Contractor personnel • Air Impact Wrench with Sockets • Mud Scales (as needed)



GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr. Suite 190
Houston, TX. 77086

PHONE: +1 (281) 602-4100
FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

PRESSURE TEST CERTIFICATE

Customer:

AKITA DRILLING USA CORP

Test Date:

5/29/2024

Customer Ref.:

POC0048688 (TAG RIG 57)

Hose Serial No.:

H3-052924-4

Invoice No.:

530233

Created By:

Danny Martinez - Rios

Product Description:

3.0" X 21' GATES FIRE RATED CHOKE & KILL HOSE ASSEMBLY SUITED FOR H2S SERVICE C/W 3-1/8" 5K FIXED X FLOAT
FLANGES

End Fitting 1:

3 1/8 5k FLG FIXED

End Fitting 2:

3 1/8 5k FLG FLOAT

Oracle Star No.:

68903050-10475543

Assembly Code:

L44385 050724

CUSTOMER P/N:

FRD3.021.0CK3185KFLTXFIX

Test Pressure:

7,500 PSI.

Working Pressure:

5,000 PSI.

Gates Engineering & Services North America certifies that:

The following hose assembly has successfully passed all pressure testing requirements set forth in Gates specifications: GTS-04-052 (for 5K assemblies) or GTS-04-053 (10K assemblies) or GTS-04-048 (15K assemblies), which include reference to Specification API 16C (3rd Edition); sections 7.4.1, 7.4.5, and 10.7.7. A test graph will accompany this test certificate to illustrate conformity to test requirements. This hose assembly was pressure tested using equipment and instrumentation that has been calibrated in accordance with the requirements set-forth in the GESNA management system.

Quality:

QUALITY

Date :

5/29/2024

Signature :

Production:

PRODUCTION

Date :

5/29/2024

Signature :

F-PRD-005B

Revision 7_03012022

**BLACK GOLD®**

GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Pralrle Oak Dr.
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FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

CERTIFICATE OF CONFORMANCE

This is to certify that all parts and materials included in this shipment have manufactured and/or processed in accordance with various Gates and API assembly and test specifications. Records of required tests are on-file and subject to examination. Test reports and subsequent test graphs have been made available with this shipment. Additional supporting documentation related to materials, welding, weld inspections, and heat-treatment activities are available upon request.

CUSTOMER: AKITA DRILLING USA CORP
CUSTOMER P.O.#: POC0048688 (TAG RIG 57)
CUSTOMER P./N.#: FRD3.021.0CK3185KFLTXFIX

PART DESCRIPTION: 3.0" X 21' GATES FIRE RATED CHOKE & KILL HOSE ASSEMBLY SUITED FOR H2S
SERVICE C/W 3-1/8" 5K FIXED X FLOAT FLANGES

SALES ORDER #: 530233
QUANTITY: 1
SERIAL #: H3-052924-4

SIGNATURE:

Danny Martinez Pries

TITLE:

QUALITY ASSURANCE

DATE:

5/29/2024



5/29/2024 1:43:50 PM

TEST REPORT

CUSTOMER

Company: AKITA DRILLING

Production description:

Sales order #: 530233

Customer reference: FG9751

TEST OBJECT

Serial number: H3-052924-4

Lot number: L44385050724

Description:

Hose ID: 3.0" 5k ck ms

Part number:

TEST INFORMATION

Test procedure: GTS-04-052

Test pressure: 7500.00 psi

Test pressure hold: 3600.00 sec

Work pressure: 5000.00 psi

Work pressure hold: 900.00 sec

Length difference: 0.00 %

Length difference: 0.00 inch

Fitting 1: 3.0 x 3-1/8 5K

Part number:

Description:

Fitting 2: 3.0 x 3-1/8 5K

Part number:

Description:

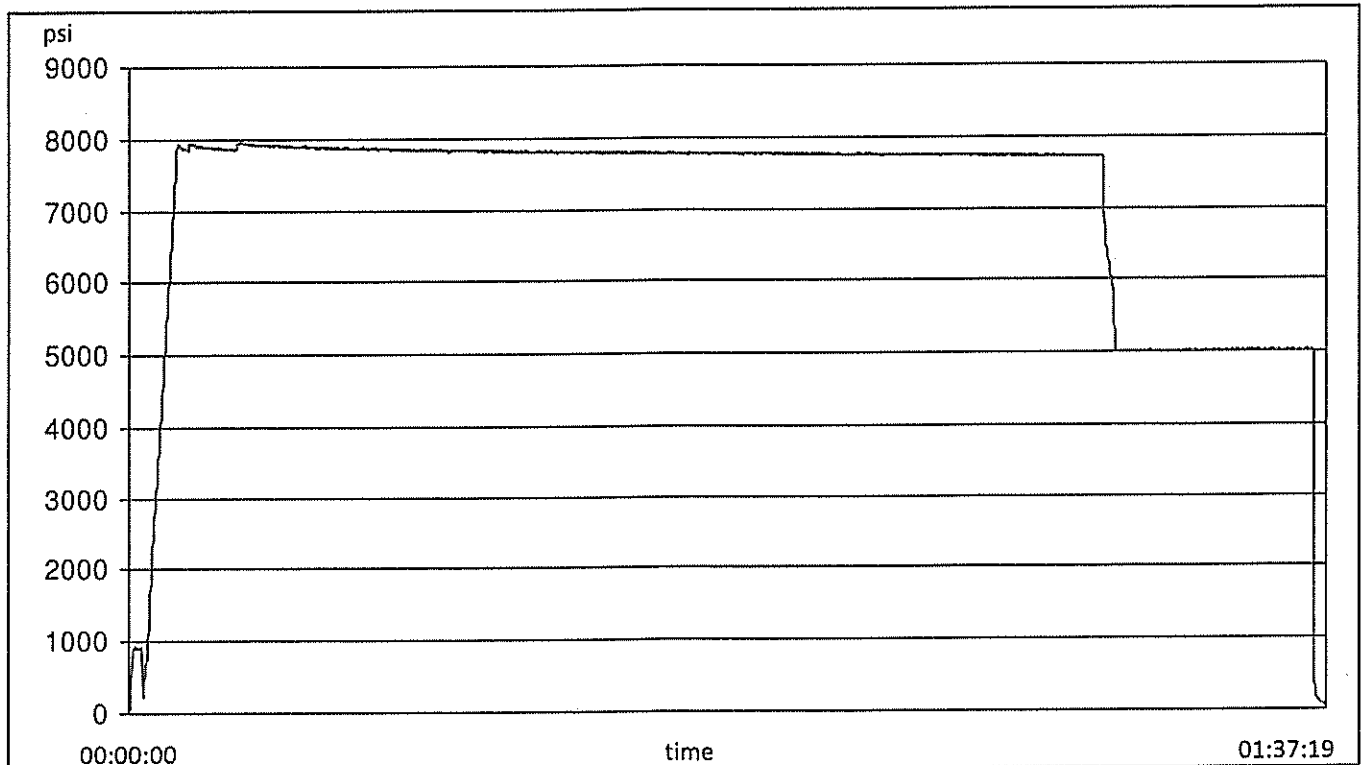
Visual check:

Length: 21 feet

Pressure test result: PASS

Length measurement result:

Test operator: Martin





5/29/2024 1:43:50 PM

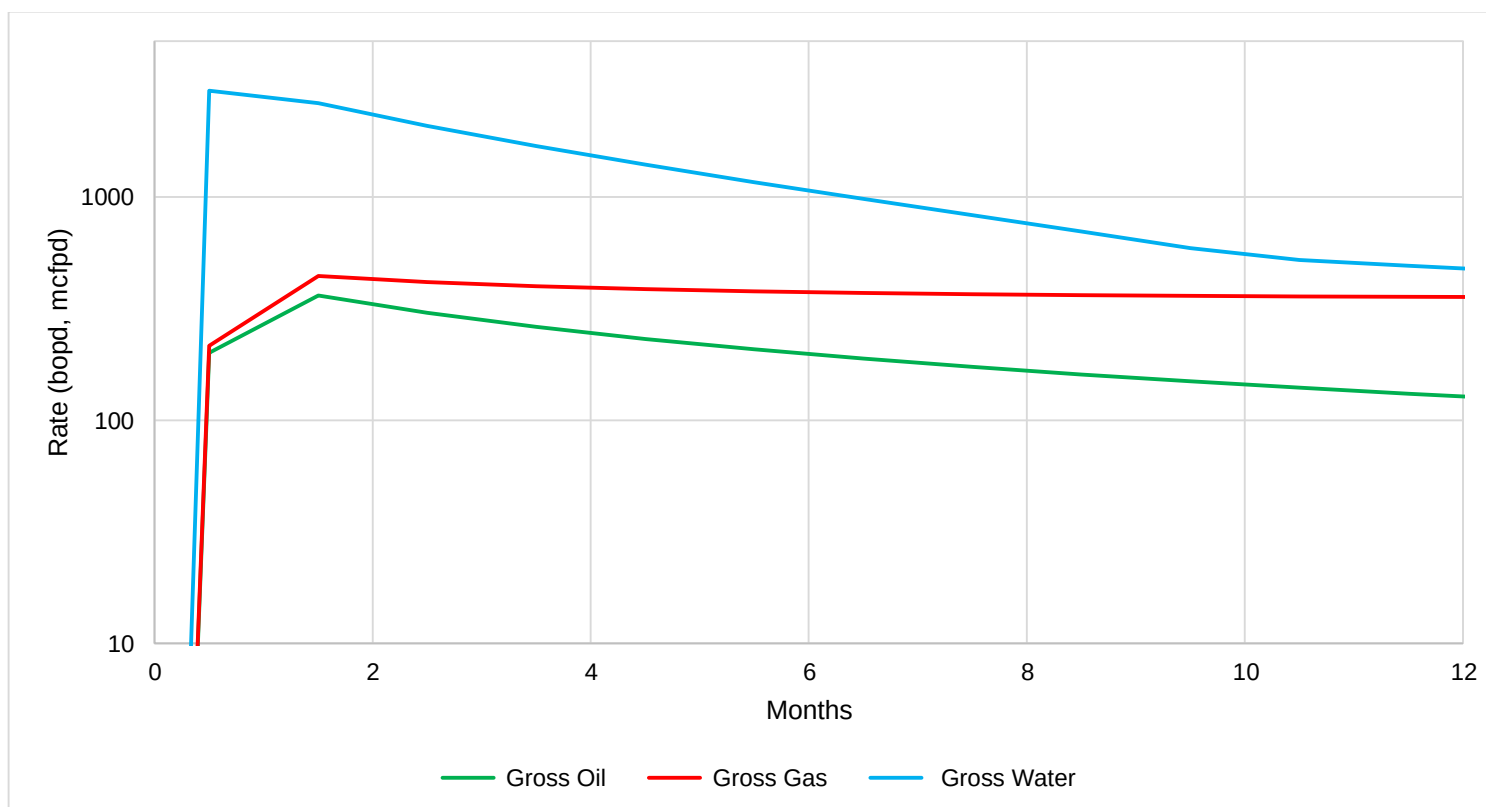
TEST REPORT

GAUGE TRACEABILITY

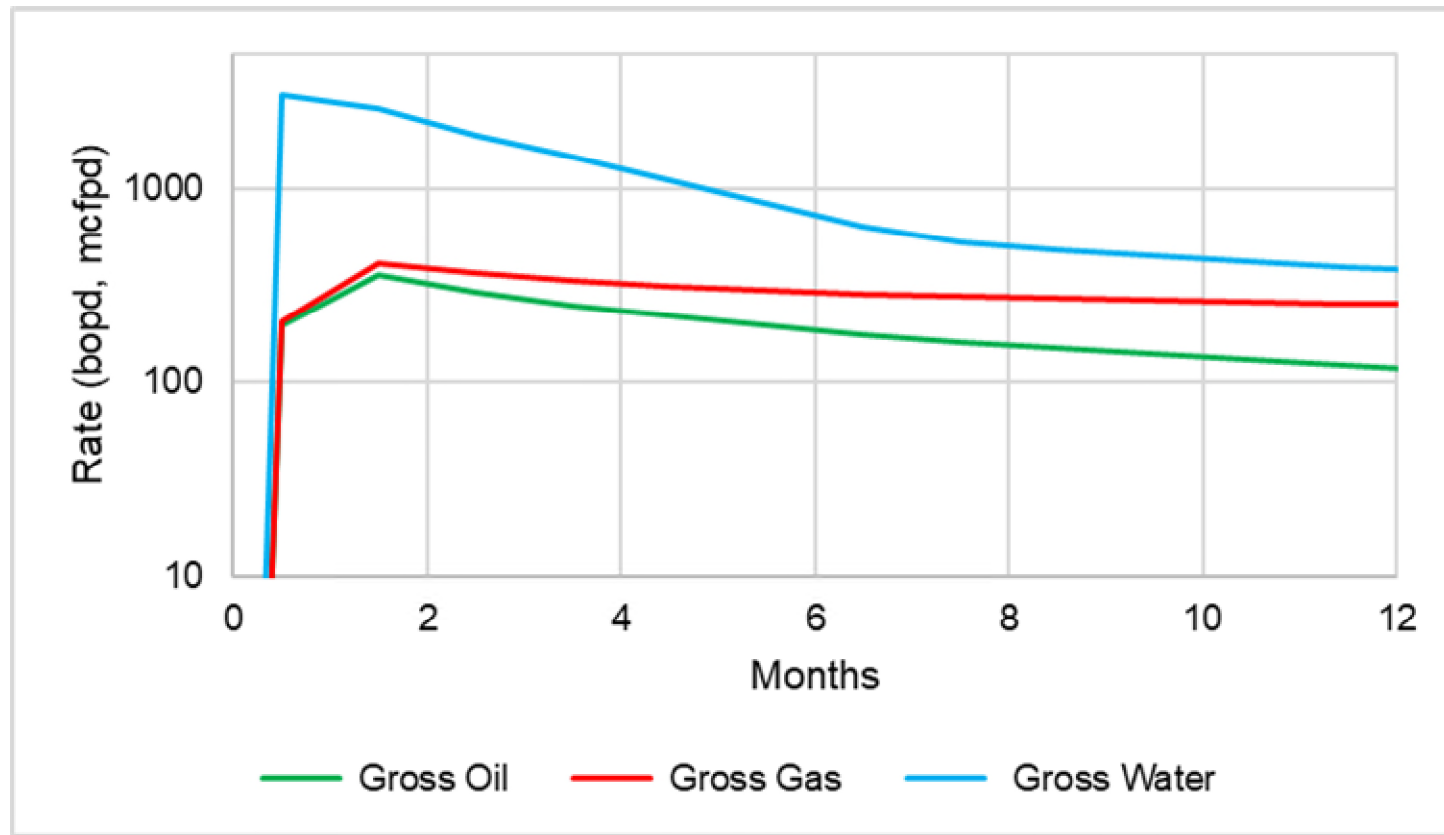
Description	Serial number	Calibration date	Calibration due date
S-25-A-W	110D3PHO	2023-06-06	2024-06-06
S-25-A-W	110IQWDG	2023-05-31	2024-05-31
S-25-A-W	110M6WPF	2024-02-02	2025-02-02

Comment

Loco Hills Paddock Type Curve



Loco Hills Blinebry Type Curve



State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Electronically
Via E-permitting

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: SPUR ENERGY PARTNERS LLC **OGRID:** 328947 **Date:** 02 / 02 / 26

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
POLO AOP FED COM 1H	30-015-55195	I-10-19S-25E	1669' FSL 162' FEL	331 BBL/D	503 MCF/D	868 BBL/D
POLO AOP FED COM 10H	30-015-55170	I-10-19S-25E	1684' FSL 175' FEL	378 BBL/D	413 MCF/D	1511 BBL/D
POLO AOP FED COM 11H	30-015-55197	P-10-19S-25E	725' FSL 235' FEL	378 BBL/D	413 MCF/D	1511 BBL/D
POLO AOP FED COM 70H	30-015-55199	P-10-19S-25E	745' FSL 235' FEL	285 BBL/D	302 MCF/D	2241 BBL/D

IV. Central Delivery Point Name: POLO AOP FEDERAL COM TANK BATTERY [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
POLO AOP FED COM 1H	30-015-55195	06/14/2026	06/19/2026	08/14/2026	08/24/2026	09/10/2026
POLO AOP FED COM 10H	30-015-55170	06/19/2026	06/24/2026	08/14/2026	08/24/2026	09/10/2026
POLO AOP FED COM 11H	30-015-55197	06/24/2026	06/29/2026	08/14/2026	08/24/2026	09/10/2026
POLO AOP FED COM 70H	30-015-55199	06/29/2026	07/04/2026	08/14/2026	08/24/2026	09/10/2026

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☒ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	<i>Sarah Savino</i>
Printed Name:	SARAH SAVINO
Title:	REGULATORY DIRECTOR
E-mail Address:	SSAVINO@SPUREENERGY.COM
Date:	02/02/2026
Phone:	832-930-8613
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)	
Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	



Natural Gas Management Plan – Attachment

VI. Separation equipment will be sized by construction engineering staff based on anticipated daily production to ensure adequate capacity.

VII. Spur Energy Partners LLC ("Spur") will take the following actions to comply with the regulations listed in 19.15.27.8:

- A. Spur will maximize the recovery of natural gas by minimizing waste, as defined by 19.15.2 NMAC, of natural gas through venting and flaring. Spur will ensure that our wells will be connected to a natural gas gathering system with sufficient capacity to transport natural gas.
- B. All drilling operations will be equipped with a rig flare at least 100 feet from the nearest surface hole location. Rig flare will be utilized to combust any natural gas that is brought to surface during normal operations. In the case of emergency, flaring volumes will be reported appropriately.
- C. During completion operations any natural gas brought to surface will be flared. Immediately following completion operations, wells will flow to permanent separation equipment. Produced natural gas from separation equipment will be sent to sales. If natural gas does not meet gathering pipeline specifications, Spur will flare for 60 days or until natural gas meets the pipeline specifications. Spur will ensure flare is properly sized and is equipped with an automatic igniter or continuous pilot. Gas samples will be taken twice per week and natural gas will be routed into a gathering system as soon as the pipeline specifications are met.
- D. Natural gas will not be flared with the exception of 19.15.27.8(D)(1-4). If there is no adequate takeaway for the separator gas, wells will be shut-in until that natural gas gathering system is available with exception of emergency or malfunction situations. Volumes will be reported appropriately.
- E. Spur will comply with performance standards pursuant to 19.15.27.8(E)(1-8). All equipment will be designed and sized to handle maximum pressures to minimize waste. Storage tanks constructed after May 25, 2021 will be equipped with an automatic gauging system that reduces venting of natural gas. Flare stacks installed or replaced after May 25, 2021 will be equipped with an automatic igniter or continuous pilot. Spur will conduct AVO inspections as described in 19.15.27.8(E)(5)(a) with frequencies specified in 19.15.27.8(E)(5)(b) and (c). All emergencies or malfunctions will be resolved as quickly and safely as possible to minimize waste.
- F. The volume of natural gas that is vented or flared as the result of an emergency or malfunction during drilling and/or completion operations will be estimated and reported accordingly. The volume of natural gas that is vented, flared or beneficially used during production operations, will be measured and reported accordingly. Spur will install equipment to measure the volume of natural gas flared from existing piping or a flowline piped from equipment such as high-pressure separators, heater treaters, or VRUs associated with a well or facility associated with a well authorized by an APD after May 25, 2021 that has an average daily production of less than 60,000 cubic feet of natural gas. If metering is not practicable due to circumstances such as low flow rate or low pressure venting or flaring, Spur will estimate the volume of flared or vented natural gas. Measuring equipment will conform to industry standards and will not be equipped with a manifold



that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing equipment.

VIII. For maintenance activities involving production equipment and compression, venting be limited to the depressurization of the subject equipment to ensure safe working conditions. For maintenance of production equipment, the associated producing wells will be shut-in to eliminate venting. For maintenance of VRUs, all natural gas normally routed to the VRU will be routed to flare.



Project: EDDY COUNTY, NM (NAD 83 - NME)
Site: POLO AOP FEDERAL COM
Well: 10H
Wellbore: OH
Design: PERMIT

PROJECT DETAILS: EDDY COUNTY, NM (NAD 83 - NME)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

WELL DETAILS: 10H

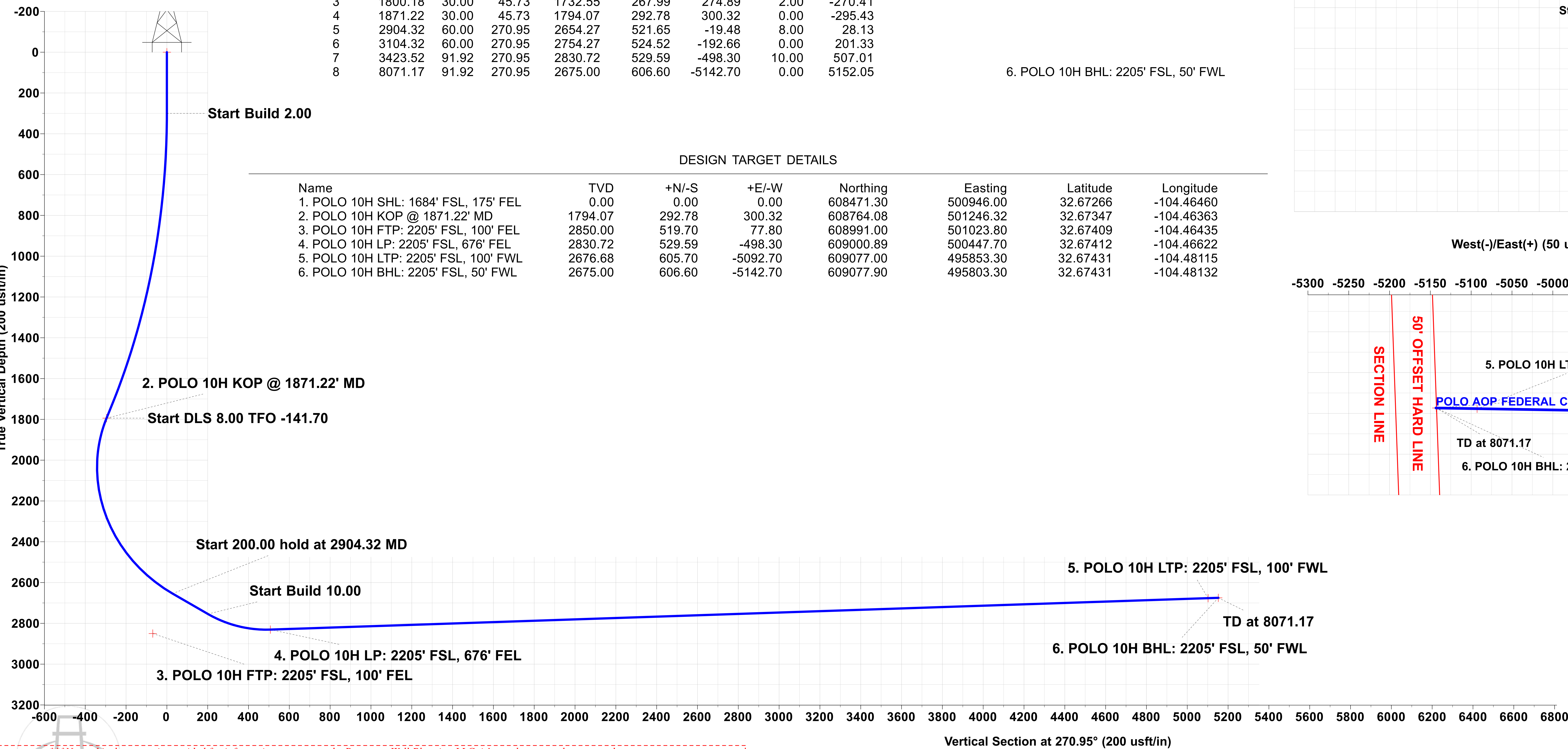
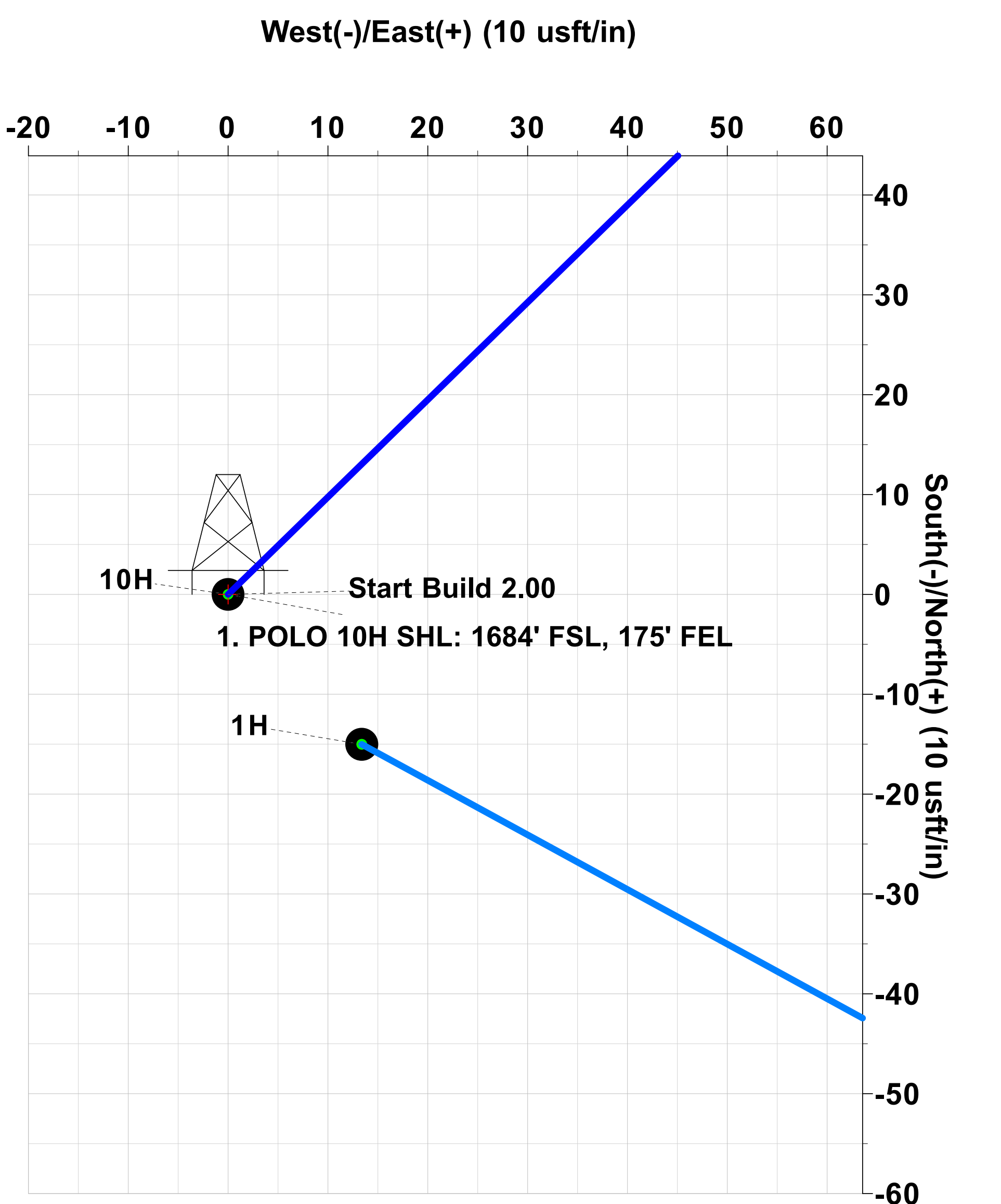
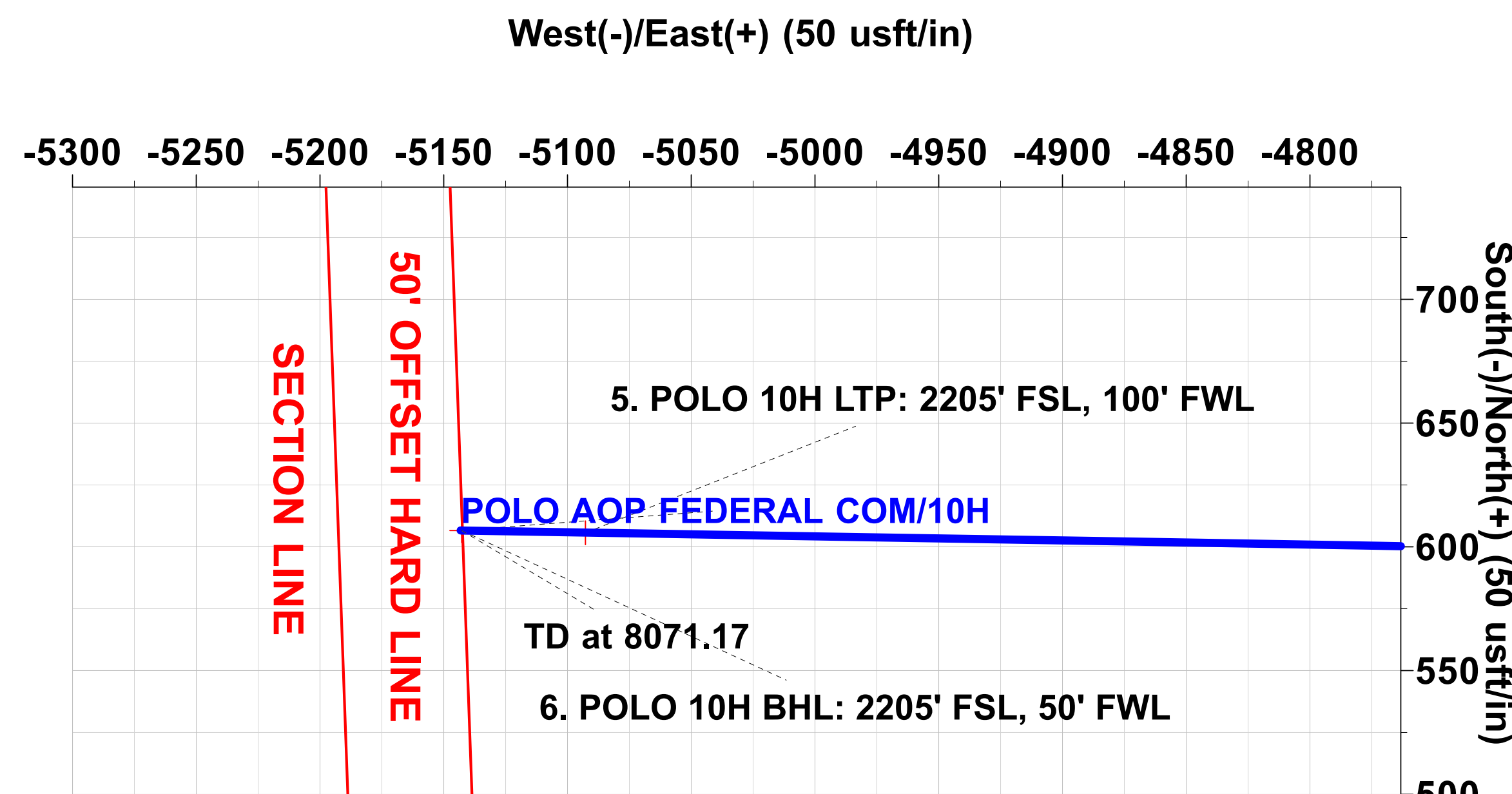
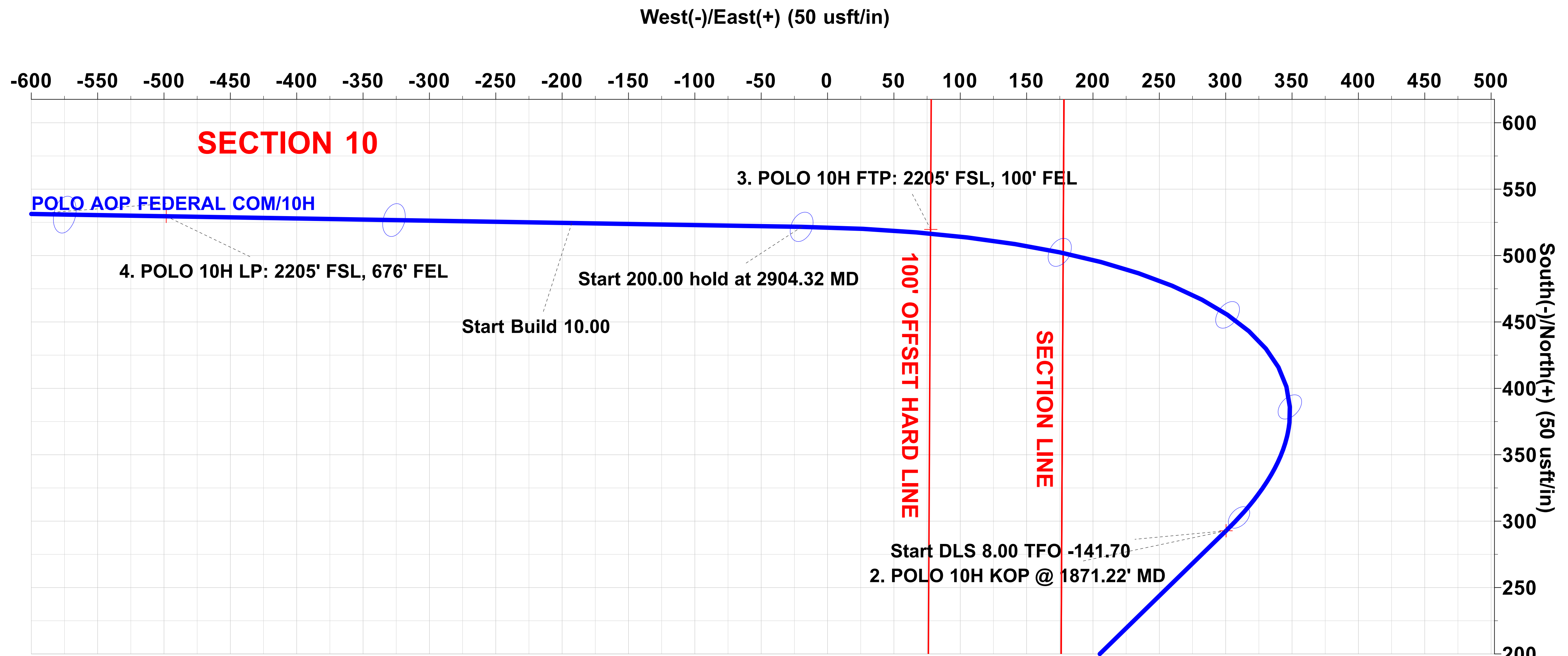
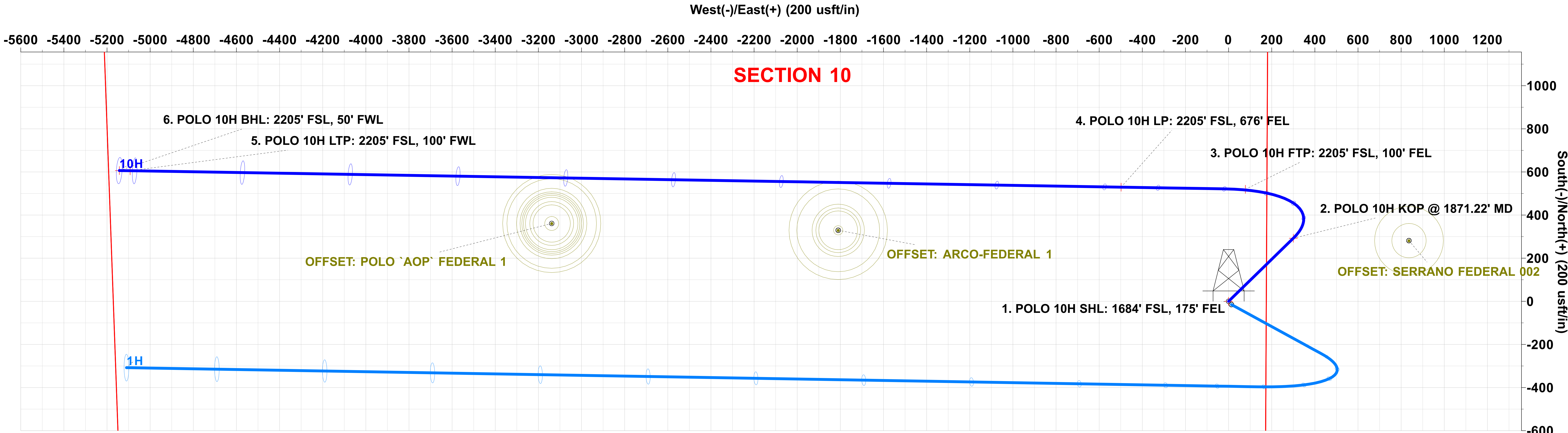
Rig Name:		AKITA 57 RKB = 20' @ 3482.00usft (AKITA 57)			
		Ground Elevation:		3462.00	
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	608471.30	500946.00	32.67266	-104.46460

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	
3	1800.18	30.00	45.73	1732.55	267.99	274.89	2.00	-270.41	
4	1871.22	30.00	45.73	1794.07	292.78	300.32	0.00	-295.43	
5	2904.32	60.00	270.95	2654.27	521.65	-19.48	8.00	28.13	
6	3104.32	60.00	270.95	2754.27	524.52	-192.66	0.00	201.33	
7	3423.52	91.92	270.95	2830.72	529.59	-498.30	10.00	507.01	
8	8071.17	91.92	270.95	2675.00	606.60	-5142.70	0.00	5152.05	6. POLO 10H BHL: 2205' FSL, 50' FWL

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
1. POLO 10H SHL: 1684' FSL, 175' FEL	0.00	0.00	0.00	608471.30	500946.00	32.67266	-104.46460
2. POLO 10H KOP @ 1871.22' MD	1794.07	292.78	300.32	608764.08	501246.32	32.67347	-104.46363
3. POLO 10H FTP: 2205' FSL, 100' FEL	2850.00	519.70	77.80	608991.00	501023.80	32.67409	-104.46435
4. POLO 10H LP: 2205' FSL, 676' FEL	2830.72	529.59	-498.30	609000.89	500447.70	32.67412	-104.46622
5. POLO 10H LTP: 2205' FSL, 100' FWL	2676.68	605.70	-5092.70	609077.00	495853.30	32.67431	-104.48115
6. POLO 10H BHL: 2205' FSL, 50' FWL	2675.00	606.60	-5142.70	609077.90	495803.30	32.67431	-104.48132



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Plan: PERMIT (10H/OH)

Created By: PROTOTYPE WELL PLANNING Date: 10:25, January 21 2016



SPUR ENERGY PARTNERS, LLC

EDDY COUNTY, NM (NAD 83 - NME)

POLO AOP FEDERAL COM

10H

OH

Plan: PERMIT

Standard Planning Report

21 January, 2026



**PROTOTYPE
WELL PLANNING**
WELL PLANNED. WELL EXECUTED.



PROTOTYPE

Planning Report



Database:	EDM 5000.17 Single User Db	Local Co-ordinate Reference:	Well 10H
Company:	SPUR ENERGY PARTNERS, LLC	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site:	POLO AOP FEDERAL COM	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Project	EDDY COUNTY, NM (NAD 83 - NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Well	10H			
Well Position	+N/-S	0.00 usft	Northing:	608,471.30 usft
	+E/-W	0.00 usft	Easting:	500,946.00 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft
Grid Convergence:		-0.07 °	Ground Level:	3,462.00 usft

Design	PERMIT			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	270.95

Plan Survey Tool Program	Date	1/14/2026		
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks
(usft)	(usft)			
1	0.00	8,070.97 PERMIT (OH)	MWD+IFR1+MS	
			OWSG MWD + IFR1 + Mult	

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.18	30.00	45.73	1,732.55	267.99	274.89	2.00	2.00	0.00	45.73	
1,871.22	30.00	45.73	1,794.07	292.78	300.32	0.00	0.00	0.00	0.00	
2,904.32	60.00	270.95	2,654.28	521.65	-19.48	8.00	2.90	-13.05	-141.70	
3,104.32	60.00	270.95	2,754.28	524.52	-192.66	0.00	0.00	0.00	0.00	
3,423.52	91.92	270.95	2,830.72	529.59	-498.30	10.00	10.00	0.00	0.00	
8,071.17	91.92	270.95	2,675.00	606.60	-5,142.70	0.00	0.00	0.00	0.00	6. POLO 10H BHL:



PROTOTYPE Planning Report



Database:	EDM 5000.17 Single User Db	Local Co-ordinate Reference:	Well 10H
Company:	SPUR ENERGY PARTNERS, LLC	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site:	POLO AOP FEDERAL COM	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1. POLO 10H SHL: 1684' FSL, 175' FEL									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	45.73	399.98	1.22	1.25	-1.23	2.00	2.00	0.00
500.00	4.00	45.73	499.84	4.87	5.00	-4.92	2.00	2.00	0.00
600.00	6.00	45.73	599.45	10.96	11.24	-11.05	2.00	2.00	0.00
700.00	8.00	45.73	698.70	19.46	19.96	-19.64	2.00	2.00	0.00
800.00	10.00	45.73	797.47	30.38	31.16	-30.66	2.00	2.00	0.00
900.00	12.00	45.73	895.62	43.70	44.83	-44.09	2.00	2.00	0.00
1,000.00	14.00	45.73	993.06	59.40	60.93	-59.94	2.00	2.00	0.00
1,100.00	16.00	45.73	1,089.64	77.47	79.46	-78.17	2.00	2.00	0.00
1,200.00	18.00	45.73	1,185.27	97.88	100.40	-98.76	2.00	2.00	0.00
1,300.00	20.00	45.73	1,279.82	120.60	123.71	-121.69	2.00	2.00	0.00
1,400.00	22.00	45.73	1,373.17	145.62	149.37	-146.93	2.00	2.00	0.00
1,500.00	24.00	45.73	1,465.21	172.89	177.34	-174.45	2.00	2.00	0.00
1,600.00	26.00	45.73	1,555.84	202.39	207.60	-204.22	2.00	2.00	0.00
1,700.00	28.00	45.73	1,644.94	234.08	240.11	-236.19	2.00	2.00	0.00
1,800.18	30.00	45.73	1,732.55	267.99	274.89	-270.41	2.00	2.00	0.00
1,871.22	30.00	45.73	1,794.07	292.78	300.32	-295.43	0.00	0.00	0.00
2. POLO 10H KOP @ 1871.22' MD									
1,900.00	28.23	42.71	1,819.21	302.81	310.09	-305.03	8.00	-6.16	-10.49
1,950.00	25.33	36.58	1,863.85	320.10	324.49	-319.14	8.00	-5.79	-12.27
2,000.00	22.75	29.07	1,909.52	337.14	335.57	-329.93	8.00	-5.17	-15.02
2,050.00	20.59	19.92	1,956.00	353.87	343.27	-337.35	8.00	-4.31	-18.29
2,100.00	19.02	9.05	2,003.06	370.19	347.55	-341.36	8.00	-3.15	-21.74
2,150.00	18.17	356.77	2,050.47	386.02	348.39	-341.94	8.00	-1.69	-24.57
2,200.00	18.16	343.91	2,097.99	401.30	345.79	-339.09	8.00	-0.03	-25.71
2,250.00	18.97	331.59	2,145.41	415.94	339.76	-332.82	8.00	1.64	-24.65
2,300.00	20.52	320.65	2,192.48	429.87	330.33	-323.16	8.00	3.10	-21.87
2,350.00	22.66	311.44	2,238.99	443.03	317.55	-310.16	8.00	4.27	-18.42
2,400.00	25.23	303.88	2,284.69	455.35	301.48	-293.89	8.00	5.14	-15.13
2,450.00	28.12	297.70	2,329.37	466.77	282.19	-274.41	8.00	5.77	-12.36
2,500.00	31.23	292.62	2,372.82	477.24	259.78	-251.84	8.00	6.23	-10.15
2,550.00	34.51	288.40	2,414.81	486.70	234.37	-226.27	8.00	6.56	-8.44
2,600.00	37.92	284.84	2,455.15	495.11	206.06	-197.83	8.00	6.81	-7.12
2,650.00	41.41	281.79	2,493.64	502.43	175.01	-166.66	8.00	6.99	-6.10
2,700.00	44.98	279.14	2,530.08	508.62	141.37	-132.91	8.00	7.13	-5.30
2,750.00	48.60	276.81	2,564.32	513.65	105.28	-96.75	8.00	7.24	-4.67
2,800.00	52.26	274.72	2,596.16	517.50	66.95	-58.36	8.00	7.32	-4.18
2,850.00	55.96	272.83	2,625.47	520.15	26.54	-17.91	8.00	7.39	-3.78
2,904.32	60.00	270.95	2,654.28	521.65	-19.48	28.13	8.00	7.45	-3.45
2,917.92	60.00	270.95	2,661.07	521.84	-31.26	39.90	0.00	0.00	0.00
3. POLO 10H FTP: 2205' FSL, 100' FEL									
3,000.00	60.00	270.95	2,702.11	523.02	-102.33	110.99	0.00	0.00	0.00
3,104.32	60.00	270.95	2,754.28	524.52	-192.66	201.33	0.00	0.00	0.00
3,150.00	64.57	270.95	2,775.51	525.19	-233.08	241.76	10.00	10.00	0.00
3,200.00	69.57	270.95	2,794.99	525.95	-279.11	287.79	10.00	10.00	0.00
3,250.00	74.57	270.95	2,810.38	526.74	-326.66	335.35	10.00	10.00	0.00
3,300.00	79.57	270.95	2,821.57	527.55	-375.37	384.07	10.00	10.00	0.00
3,350.00	84.57	270.95	2,828.46	528.37	-424.87	433.57	10.00	10.00	0.00
3,400.00	89.57	270.95	2,831.02	529.20	-474.78	483.49	10.00	10.00	0.00



PROTOTYPE Planning Report



Database:	EDM 5000.17 Single User Db	Local Co-ordinate Reference:	Well 10H
Company:	SPUR ENERGY PARTNERS, LLC	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site:	POLO AOP FEDERAL COM	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,423.52	91.92	270.95	2,830.72	529.59	-498.30	507.01	10.00	10.00	0.00	
4. POLO 10H LP: 2205' FSL, 676' FEL										
3,500.00	91.92	270.95	2,828.15	530.85	-574.72	583.44	0.00	0.00	0.00	
3,600.00	91.92	270.95	2,824.80	532.51	-674.65	683.39	0.00	0.00	0.00	
3,700.00	91.92	270.95	2,821.45	534.17	-774.58	783.33	0.00	0.00	0.00	
3,800.00	91.92	270.95	2,818.10	535.82	-874.51	883.28	0.00	0.00	0.00	
3,900.00	91.92	270.95	2,814.75	537.48	-974.44	983.22	0.00	0.00	0.00	
4,000.00	91.92	270.95	2,811.40	539.14	-1,074.37	1,083.16	0.00	0.00	0.00	
4,100.00	91.92	270.95	2,808.05	540.80	-1,174.30	1,183.11	0.00	0.00	0.00	
4,200.00	91.92	270.95	2,804.70	542.45	-1,274.23	1,283.05	0.00	0.00	0.00	
4,300.00	91.92	270.95	2,801.35	544.11	-1,374.16	1,382.99	0.00	0.00	0.00	
4,400.00	91.92	270.95	2,798.00	545.77	-1,474.09	1,482.94	0.00	0.00	0.00	
4,500.00	91.92	270.95	2,794.65	547.42	-1,574.02	1,582.88	0.00	0.00	0.00	
4,600.00	91.92	270.95	2,791.30	549.08	-1,673.95	1,682.83	0.00	0.00	0.00	
4,700.00	91.92	270.95	2,787.95	550.74	-1,773.88	1,782.77	0.00	0.00	0.00	
4,800.00	91.92	270.95	2,784.60	552.39	-1,873.81	1,882.71	0.00	0.00	0.00	
4,900.00	91.92	270.95	2,781.25	554.05	-1,973.74	1,982.66	0.00	0.00	0.00	
5,000.00	91.92	270.95	2,777.90	555.71	-2,073.67	2,082.60	0.00	0.00	0.00	
5,100.00	91.92	270.95	2,774.55	557.37	-2,173.60	2,182.55	0.00	0.00	0.00	
5,200.00	91.92	270.95	2,771.20	559.02	-2,273.53	2,282.49	0.00	0.00	0.00	
5,300.00	91.92	270.95	2,767.85	560.68	-2,373.46	2,382.43	0.00	0.00	0.00	
5,400.00	91.92	270.95	2,764.50	562.34	-2,473.39	2,482.38	0.00	0.00	0.00	
5,500.00	91.92	270.95	2,761.14	563.99	-2,573.32	2,582.32	0.00	0.00	0.00	
5,600.00	91.92	270.95	2,757.79	565.65	-2,673.25	2,682.26	0.00	0.00	0.00	
5,700.00	91.92	270.95	2,754.44	567.31	-2,773.18	2,782.21	0.00	0.00	0.00	
5,800.00	91.92	270.95	2,751.09	568.97	-2,873.11	2,882.15	0.00	0.00	0.00	
5,900.00	91.92	270.95	2,747.74	570.62	-2,973.04	2,982.10	0.00	0.00	0.00	
6,000.00	91.92	270.95	2,744.39	572.28	-3,072.97	3,082.04	0.00	0.00	0.00	
6,100.00	91.92	270.95	2,741.04	573.94	-3,172.90	3,181.98	0.00	0.00	0.00	
6,200.00	91.92	270.95	2,737.69	575.59	-3,272.83	3,281.93	0.00	0.00	0.00	
6,300.00	91.92	270.95	2,734.34	577.25	-3,372.76	3,381.87	0.00	0.00	0.00	
6,400.00	91.92	270.95	2,730.99	578.91	-3,472.69	3,481.82	0.00	0.00	0.00	
6,500.00	91.92	270.95	2,727.64	580.56	-3,572.63	3,581.76	0.00	0.00	0.00	
6,600.00	91.92	270.95	2,724.29	582.22	-3,672.56	3,681.70	0.00	0.00	0.00	
6,700.00	91.92	270.95	2,720.94	583.88	-3,772.49	3,781.65	0.00	0.00	0.00	
6,800.00	91.92	270.95	2,717.59	585.54	-3,872.42	3,881.59	0.00	0.00	0.00	
6,900.00	91.92	270.95	2,714.24	587.19	-3,972.35	3,981.54	0.00	0.00	0.00	
7,000.00	91.92	270.95	2,710.89	588.85	-4,072.28	4,081.48	0.00	0.00	0.00	
7,100.00	91.92	270.95	2,707.54	590.51	-4,172.21	4,181.42	0.00	0.00	0.00	
7,200.00	91.92	270.95	2,704.19	592.16	-4,272.14	4,281.37	0.00	0.00	0.00	
7,300.00	91.92	270.95	2,700.84	593.82	-4,372.07	4,381.31	0.00	0.00	0.00	
7,400.00	91.92	270.95	2,697.49	595.48	-4,472.00	4,481.25	0.00	0.00	0.00	
7,500.00	91.92	270.95	2,694.14	597.14	-4,571.93	4,581.20	0.00	0.00	0.00	
7,600.00	91.92	270.95	2,690.79	598.79	-4,671.86	4,681.14	0.00	0.00	0.00	
7,700.00	91.92	270.95	2,687.44	600.45	-4,771.79	4,781.09	0.00	0.00	0.00	
7,800.00	91.92	270.95	2,684.09	602.11	-4,871.72	4,881.03	0.00	0.00	0.00	
7,900.00	91.92	270.95	2,680.74	603.76	-4,971.65	4,980.97	0.00	0.00	0.00	
8,000.00	91.92	270.95	2,677.38	605.42	-5,071.58	5,080.92	0.00	0.00	0.00	
5. POLO 10H LTP: 2205' FSL, 100' FWL										
8,071.17	91.92	270.95	2,675.00	606.60	-5,142.70	5,152.05	0.00	0.00	0.00	
6. POLO 10H BHL: 2205' FSL, 50' FWL										



PROTOTYPE

Planning Report



Database:	EDM 5000.17 Single User Db	Local Co-ordinate Reference:	Well 10H
Company:	SPUR ENERGY PARTNERS, LLC	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site:	POLO AOP FEDERAL COM	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
1. POLO 10H SHL: 16 - plan hits target center - Point	0.00	360.00	0.00	0.00	0.00	608,471.30	500,946.00	32.67267	-104.46460
2. POLO 10H KOP @ - plan hits target center - Point	0.00	0.00	1,794.07	292.78	300.32	608,764.09	501,246.32	32.67347	-104.46363
6. POLO 10H BHL: 22 - plan hits target center - Point	0.00	0.00	2,675.00	606.60	-5,142.70	609,077.90	495,803.30	32.67431	-104.48132
5. POLO 10H LTP: 22 - plan misses target center by 21.14usft at 8000.00usft MD (2677.38 TVD, 605.42 N, -5071.58 E) - Point	0.00	0.00	2,676.68	605.70	-5,092.70	609,077.00	495,853.30	32.67431	-104.48116
4. POLO 10H LP: 220 - plan hits target center - Point	0.00	360.00	2,830.72	529.59	-498.30	609,000.89	500,447.70	32.67412	-104.46623
3. POLO 10H FTP: 22 - plan misses target center by 218.15usft at 2917.92usft MD (2661.07 TVD, 521.84 N, -31.26 E) - Point	0.00	0.00	2,850.00	519.70	77.80	608,991.00	501,023.80	32.67409	-104.46435



SPUR ENERGY PARTNERS, LLC

**EDDY COUNTY, NM (NAD 83 - NME)
POLO AOP FEDERAL COM
10H**

**OH
PERMIT**

Anticollision Report

21 January, 2026



**PROTOTYPE
WELL PLANNING**
WELL PLANNED. WELL EXECUTED.



PROTOTYPE

Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Reference	PERMIT
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 50.00usft
Depth Range:	Unlimited
Results Limited by:	Maximum centre distance of 1,900.00usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Pedal Curve
Casing Method:	Not applied

Survey Tool Program		Date	1/14/2026		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,070.97	PERMIT (OH)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
POLO AOP FEDERAL COM						
1H - OH - PERMIT	300.00	299.00	20.11	16.21	5.152	CC, ES
1H - OH - PERMIT	400.00	397.95	22.60	17.55	4.476	SF
OFFSET: ARCO-FEDERAL 1 - OH - OH	4,732.32	2,805.35	220.41	142.74	2.838	CC, ES, SF
OFFSET: POLO 'AOP' FEDERAL 1 - OH - OH	6,061.70	2,761.65	211.45	116.61	2.230	CC, ES, SF
OFFSET: SERRANO FEDERAL 002 - OH - OH	2,095.46	1,979.77	496.80	410.05	5.727	CC
OFFSET: SERRANO FEDERAL 002 - OH - OH	2,100.00	1,984.06	496.82	409.89	5.715	ES
OFFSET: SERRANO FEDERAL 002 - OH - OH	2,250.00	2,126.41	514.49	421.96	5.560	SF

Offset Design: POLO AOP FEDERAL COM - 1H - OH - PERMIT													Offset Site Error:	0.00 usft	
Survey Program:		0-MWD+IFR1+MS <th colspan="2">Offset</th> <th colspan="2">Semi Major Axis</th> <th colspan="2">Offset Wellbore Centre</th> <th colspan="2">Rule Assigned:</th> <th colspan="2">Distance</th> <th>Offset Well Error:</th> <td>0.00 usft</td>		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Distance		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	0.00	1.00	0.00	0.00	138.22	-15.00	13.40	20.14						
50.00	50.00	49.00	50.00	0.92	0.45	138.22	-15.00	13.40	20.11	18.74	1.38	14.606			
100.00	100.00	99.00	100.00	0.92	0.91	138.22	-15.00	13.40	20.11	18.27	1.84	10.936			
150.00	150.00	149.00	150.00	1.23	1.22	138.22	-15.00	13.40	20.11	17.67	2.44	8.228			
200.00	200.00	199.00	200.00	1.53	1.52	138.22	-15.00	13.40	20.11	17.07	3.05	6.602			
250.00	250.00	249.00	250.00	1.74	1.74	138.22	-15.00	13.40	20.11	16.64	3.48	5.786			
300.00	300.00	299.00	300.00	1.95	1.95	138.22	-15.00	13.40	20.11	16.21	3.90	5.152	CC, ES		
350.00	350.00	348.51	349.50	2.21	2.35	93.11	-15.30	13.94	20.72	16.26	4.46	4.646			
400.00	399.98	397.95	398.90	2.52	2.81	94.69	-16.20	15.60	22.60	17.55	5.05	4.476	SF		
450.00	449.93	447.26	448.12	2.76	3.16	96.79	-17.72	18.38	25.78	20.26	5.51	4.677			
500.00	499.84	496.40	497.05	3.01	3.50	98.96	-19.84	22.25	30.27	24.31	5.95	5.084			
550.00	549.68	545.29	545.62	3.24	3.80	100.92	-22.55	27.20	36.08	29.74	6.35	5.686			
600.00	599.45	593.88	593.73	3.47	4.10	102.58	-25.82	33.20	43.22	36.49	6.73	6.423			
650.00	649.13	642.13	641.30	3.70	4.38	103.91	-29.66	40.22	51.66	44.58	7.08	7.292			
700.00	698.70	689.96	688.26	3.93	4.66	104.95	-34.03	48.21	61.39	53.95	7.43	8.258			
750.00	748.15	737.34	734.53	4.16	4.93	105.76	-38.91	57.14	72.38	64.62	7.77	9.319			
800.00	797.47	784.21	780.04	4.39	5.19	106.38	-44.29	66.97	84.62	76.53	8.09	10.454			
850.00	846.63	830.54	824.75	4.62	5.44	106.84	-50.12	77.64	98.08	89.67	8.41	11.658			
900.00	895.62	876.29	868.58	4.85	5.69	107.17	-56.39	89.11	112.74	104.02	8.72	12.922			
950.00	944.44	921.41	911.51	5.08	5.93	107.41	-63.07	101.32	128.57	119.54	9.03	14.238			
1,000.00	993.06	965.88	953.47	5.31	6.17	107.56	-70.12	114.23	145.55	136.22	9.33	15.601			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - 1H - OH - PERMIT

Survey Program: Reference		0-MWD+IFR1+MS Offset			Semi Major Axis			Offset Wellbore Centre		Rule Assigned: Distance				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
1,050.00	1,041.46	1,009.67	994.45	5.55	6.40	107.64	-77.52	127.76	163.64	154.01	9.62	17.003			
1,100.00	1,089.64	1,052.74	1,034.40	5.79	6.62	107.67	-85.24	141.88	182.82	172.90	9.91	18.442			
1,150.00	1,137.58	1,095.09	1,073.32	6.03	6.85	107.64	-93.25	156.53	203.06	192.86	10.20	19.912			
1,200.00	1,185.27	1,136.68	1,111.18	6.26	7.06	107.57	-101.51	171.65	224.33	213.85	10.48	21.409			
1,250.00	1,232.68	1,177.51	1,147.96	6.51	7.27	107.46	-110.01	187.20	246.61	235.85	10.76	22.927			
1,300.00	1,279.82	1,217.57	1,183.68	6.75	7.47	107.31	-118.71	203.11	269.85	258.82	11.03	24.469			
1,350.00	1,326.65	1,256.84	1,218.31	6.99	7.67	107.13	-127.59	219.35	294.04	282.74	11.30	26.022			
1,400.00	1,373.17	1,300.06	1,255.98	7.24	7.89	106.95	-137.75	237.94	319.18	307.55	11.63	27.444			
1,450.00	1,419.36	1,337.53	1,288.43	7.48	8.04	106.76	-146.74	254.38	344.88	333.03	11.85	29.101			
1,500.00	1,465.21	1,380.16	1,325.35	7.73	8.20	106.69	-156.97	273.08	370.86	358.72	12.14	30.549			
1,550.00	1,510.71	1,422.60	1,362.11	7.98	8.36	106.68	-167.15	291.71	397.07	384.64	12.44	31.929			
1,600.00	1,555.84	1,464.84	1,398.69	8.23	8.53	106.73	-177.28	310.24	423.53	410.80	12.74	33.257			
1,650.00	1,600.59	1,506.87	1,435.08	8.47	8.69	106.82	-187.36	328.68	450.25	437.21	13.04	34.528			
1,700.00	1,644.94	1,548.66	1,471.27	8.72	8.86	106.94	-197.38	347.01	477.23	463.88	13.35	35.748			
1,750.00	1,688.88	1,590.22	1,507.26	8.97	9.03	107.08	-207.35	365.24	504.48	490.82	13.66	36.918			
1,800.00	1,732.39	1,631.52	1,543.02	9.22	9.20	107.24	-217.25	383.36	532.01	518.03	13.98	38.046			
1,850.00	1,775.69	1,672.68	1,578.68	9.44	9.38	108.00	-227.13	401.43	559.73	545.44	14.29	39.164			
1,900.00	1,819.21	1,713.81	1,614.29	9.66	9.54	112.74	-236.99	419.47	587.66	573.07	14.59	40.270			
1,950.00	1,863.85	1,761.34	1,655.61	9.89	9.74	121.20	-248.38	440.01	616.34	601.35	14.99	41.115			
2,000.00	1,909.52	1,820.30	1,708.48	10.12	10.03	130.96	-262.37	462.00	644.84	629.30	15.54	41.490			
2,050.00	1,956.00	1,880.88	1,764.59	10.34	10.30	142.28	-276.47	479.89	672.77	656.69	16.08	41.833			
2,100.00	2,003.06	1,943.25	1,823.85	10.54	10.57	155.23	-290.59	493.17	699.96	683.36	16.61	42.145			
2,150.00	2,050.47	2,007.58	1,886.08	10.74	10.82	169.47	-304.63	501.33	726.23	709.13	17.11	42.457			
2,200.00	2,097.99	2,074.01	1,950.99	10.92	11.03	-175.82	-318.44	503.76	751.39	733.83	17.56	42.799			
2,250.00	2,145.41	2,142.57	2,018.09	11.07	11.19	-161.77	-331.84	499.87	775.25	757.25	18.00	43.074			
2,300.00	2,192.48	2,213.27	2,086.75	11.20	11.25	-149.21	-344.62	489.09	797.64	779.23	18.41	43.329			
2,350.00	2,238.99	2,285.96	2,156.10	11.29	11.22	-138.49	-356.54	470.95	818.36	799.61	18.75	43.648			
2,400.00	2,284.69	2,360.42	2,225.06	11.34	11.14	-129.52	-367.33	445.15	837.26	818.24	19.02	44.027			
2,450.00	2,329.37	2,436.27	2,292.42	11.38	11.03	-122.02	-376.73	411.64	854.18	834.95	19.23	44.420			
2,500.00	2,372.82	2,513.06	2,356.86	11.40	10.92	-115.72	-384.50	370.66	868.99	849.58	19.41	44.771			
2,550.00	2,414.81	2,590.22	2,417.05	11.41	10.82	-110.37	-390.46	322.81	881.60	862.03	19.58	45.027			
2,600.00	2,455.15	2,667.13	2,471.82	11.41	10.74	-105.75	-394.47	269.02	891.96	872.19	19.76	45.134			
2,650.00	2,493.64	2,743.17	2,520.21	11.42	10.70	-101.74	-396.50	210.46	900.02	880.04	19.98	45.055			
2,700.00	2,530.08	2,817.73	2,561.59	11.43	10.70	-98.22	-396.61	148.46	905.80	885.57	20.23	44.768			
2,750.00	2,564.32	2,869.83	2,587.70	11.46	10.72	-95.54	-395.87	103.39	909.82	889.34	20.48	44.425			
2,800.00	2,596.16	2,919.01	2,612.29	11.49	10.76	-93.45	-395.15	60.80	912.81	892.06	20.74	44.008			
2,850.00	2,625.47	2,968.69	2,637.13	11.55	10.83	-91.88	-394.42	17.78	914.68	893.64	21.04	43.476			
2,900.00	2,652.10	3,018.64	2,662.11	11.62	10.92	-90.79	-393.68	-25.47	915.37	894.01	21.36	42.863			
2,950.00	2,677.11	3,069.40	2,686.19	11.72	11.04	-90.62	-392.93	-70.12	915.34	893.62	21.72	42.140			
3,000.00	2,702.11	3,119.72	2,706.15	11.82	11.21	-90.26	-392.15	-116.29	915.28	893.17	22.12	41.385			
3,030.51	2,717.37	3,149.78	2,716.11	11.90	11.33	-89.91	-391.67	-144.65	915.26	892.88	22.38	40.891			
3,050.00	2,727.11	3,168.65	2,721.60	11.96	11.41	-89.64	-391.36	-162.70	915.27	892.71	22.56	40.570			
3,100.00	2,752.11	3,215.59	2,732.65	12.10	11.64	-88.81	-390.59	-208.29	915.46	892.45	23.01	39.788			
3,150.00	2,775.51	3,260.69	2,739.72	12.26	11.89	-87.85	-389.84	-252.82	915.94	892.47	23.47	39.034			
3,200.00	2,794.99	3,304.76	2,743.22	12.45	12.15	-86.91	-389.09	-296.73	916.68	892.73	23.95	38.274			
3,250.00	2,810.38	3,348.90	2,743.41	12.68	12.43	-85.98	-388.34	-340.86	917.64	893.17	24.47	37.503			
3,300.00	2,821.57	3,397.39	2,742.47	12.93	12.76	-85.16	-387.52	-389.33	918.59	893.54	25.05	36.665			
3,350.00	2,828.46	3,446.75	2,741.52	13.21	13.12	-84.61	-386.69	-438.68	919.28	893.58	25.70	35.771			
3,400.00	2,831.02	3,496.61	2,740.55	13.51	13.49	-84.36	-385.84	-488.52	919.60	893.23	26.38	34.864			
3,450.00	2,829.83	3,546.61	2,739.58	13.83	13.88	-84.37	-385.00	-538.50	919.56	892.46	27.10	33.928			
3,500.00	2,828.15	3,596.60	2,738.62	14.16	14.28	-84.41	-384.15	-588.48	919.48	891.63	27.84	33.023			
3,550.00	2,826.48	3,646.60	2,737.65	14.51	14.70	-84.46	-383.31	-638.46	919.39	890.76	28.63	32.111			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE

Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - 1H - OH - PERMIT

Survey Program: 0-MWD+IFR1+MS													Offset Site Error:	0.00 usft
Reference Offset				Semi Major Axis		Offset Wellbore Centre			Rule Assigned: Distance				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
3,600.00	2,824.80	3,696.59	2,736.68	14.87	15.12	-84.50	-382.46	-688.44	919.31	889.88	29.42	31.245		
3,650.00	2,823.13	3,746.59	2,735.71	15.25	15.56	-84.54	-381.61	-738.41	919.22	888.97	30.25	30.385		
3,700.00	2,821.45	3,796.58	2,734.74	15.63	15.99	-84.59	-380.77	-788.39	919.14	888.05	31.08	29.570		
3,750.00	2,819.78	3,846.58	2,733.77	16.03	16.45	-84.63	-379.92	-838.37	919.05	887.10	31.95	28.766		
3,800.00	2,818.10	3,896.57	2,732.80	16.43	16.90	-84.67	-379.07	-888.35	918.97	886.15	32.82	28.004		
3,850.00	2,816.43	3,946.57	2,731.84	16.85	17.37	-84.72	-378.23	-938.33	918.89	885.18	33.71	27.257		
3,900.00	2,814.75	3,996.56	2,730.87	17.27	17.84	-84.76	-377.38	-988.31	918.81	884.20	34.61	26.549		
3,950.00	2,813.08	4,046.56	2,729.90	17.71	18.31	-84.81	-376.54	-1,038.28	918.72	883.19	35.53	25.858		
4,000.00	2,811.40	4,096.55	2,728.93	18.14	18.79	-84.85	-375.69	-1,088.26	918.64	882.19	36.45	25.202		
4,050.00	2,809.73	4,146.55	2,727.96	18.59	19.28	-84.89	-374.84	-1,138.24	918.56	881.17	37.39	24.564		
4,100.00	2,808.05	4,196.54	2,726.99	19.04	19.77	-84.94	-374.00	-1,188.22	918.48	880.14	38.34	23.957		
4,150.00	2,806.38	4,246.54	2,726.03	19.50	20.26	-84.98	-373.15	-1,238.20	918.40	879.10	39.30	23.368		
4,200.00	2,804.70	4,296.53	2,725.06	19.96	20.76	-85.02	-372.31	-1,288.18	918.32	878.06	40.26	22.808		
4,250.00	2,803.02	4,346.53	2,724.09	20.43	21.26	-85.07	-371.46	-1,338.16	918.25	877.00	41.24	22.265		
4,300.00	2,801.35	4,396.52	2,723.12	20.90	21.76	-85.11	-370.61	-1,388.13	918.17	875.95	42.22	21.747		
4,350.00	2,799.67	4,446.52	2,722.15	21.37	22.27	-85.16	-369.77	-1,438.11	918.09	874.88	43.21	21.245		
4,400.00	2,798.00	4,496.51	2,721.18	21.85	22.78	-85.20	-368.92	-1,488.09	918.01	873.81	44.21	20.766		
4,450.00	2,796.32	4,546.51	2,720.21	22.34	23.29	-85.24	-368.07	-1,538.07	917.94	872.73	45.21	20.303		
4,500.00	2,794.65	4,596.50	2,719.25	22.83	23.80	-85.29	-367.23	-1,588.05	917.86	871.64	46.22	19.860		
4,550.00	2,792.97	4,646.50	2,718.28	23.32	24.32	-85.33	-366.38	-1,638.03	917.79	870.55	47.23	19.431		
4,600.00	2,791.30	4,696.49	2,717.31	23.81	24.84	-85.38	-365.54	-1,688.00	917.71	869.46	48.25	19.020		
4,650.00	2,789.62	4,746.49	2,716.34	24.31	25.36	-85.42	-364.69	-1,737.98	917.64	868.36	49.27	18.623		
4,700.00	2,787.95	4,796.48	2,715.37	24.81	25.88	-85.46	-363.84	-1,787.96	917.56	867.26	50.30	18.242		
4,750.00	2,786.27	4,846.48	2,714.40	25.31	26.41	-85.51	-363.00	-1,837.94	917.49	866.16	51.33	17.873		
4,800.00	2,784.60	4,896.47	2,713.43	25.82	26.93	-85.55	-362.15	-1,887.92	917.42	865.05	52.37	17.519		
4,850.00	2,782.92	4,946.47	2,712.47	26.33	27.46	-85.60	-361.30	-1,937.90	917.35	863.94	53.41	17.176		
4,900.00	2,781.25	4,996.46	2,711.50	26.84	27.99	-85.64	-360.46	-1,987.88	917.28	862.82	54.45	16.846		
4,950.00	2,779.57	5,046.46	2,710.53	27.35	28.52	-85.68	-359.61	-2,037.85	917.20	861.71	55.50	16.526		
5,000.00	2,777.90	5,096.45	2,709.56	27.86	29.05	-85.73	-358.77	-2,087.83	917.13	860.59	56.55	16.219		
5,050.00	2,776.22	5,146.45	2,708.59	28.38	29.58	-85.77	-357.92	-2,137.81	917.06	859.46	57.60	15.921		
5,100.00	2,774.55	5,196.44	2,707.62	28.90	30.11	-85.82	-357.07	-2,187.79	916.99	858.34	58.65	15.634		
5,150.00	2,772.87	5,246.44	2,706.66	29.42	30.65	-85.86	-356.23	-2,237.77	916.93	857.21	59.71	15.355		
5,200.00	2,771.20	5,296.43	2,705.69	29.94	31.18	-85.90	-355.38	-2,287.75	916.86	856.08	60.77	15.086		
5,250.00	2,769.52	5,346.43	2,704.72	30.46	31.72	-85.95	-354.53	-2,337.72	916.79	854.95	61.84	14.826		
5,300.00	2,767.85	5,396.42	2,703.75	30.98	32.26	-85.99	-353.69	-2,387.70	916.72	853.82	62.90	14.574		
5,350.00	2,766.17	5,446.42	2,702.78	31.51	32.80	-86.04	-352.84	-2,437.68	916.66	852.69	63.97	14.330		
5,400.00	2,764.50	5,496.41	2,701.81	32.03	33.33	-86.08	-352.00	-2,487.66	916.59	851.55	65.04	14.093		
5,450.00	2,762.82	5,546.41	2,700.84	32.56	33.87	-86.12	-351.15	-2,537.64	916.53	850.41	66.11	13.864		
5,500.00	2,761.14	5,596.40	2,699.88	33.09	34.42	-86.17	-350.30	-2,587.62	916.46	849.28	67.18	13.641		
5,550.00	2,759.47	5,646.40	2,698.91	33.62	34.96	-86.21	-349.46	-2,637.60	916.40	848.14	68.26	13.425		
5,600.00	2,757.79	5,696.39	2,697.94	34.15	35.50	-86.26	-348.61	-2,687.57	916.33	847.00	69.33	13.216		
5,650.00	2,756.12	5,746.39	2,696.97	34.68	36.04	-86.30	-347.77	-2,737.55	916.27	845.86	70.41	13.013		
5,700.00	2,754.44	5,796.38	2,696.00	35.22	36.58	-86.34	-346.92	-2,787.53	916.21	844.71	71.49	12.815		
5,750.00	2,752.77	5,846.38	2,695.03	35.75	37.13	-86.39	-346.07	-2,837.51	916.14	843.57	72.57	12.623		
5,800.00	2,751.09	5,896.37	2,694.06	36.28	37.67	-86.43	-345.23	-2,887.49	916.08	842.43	73.66	12.437		
5,850.00	2,749.42	5,946.37	2,693.10	36.82	38.22	-86.48	-344.38	-2,937.47	916.02	841.28	74.74	12.256		
5,900.00	2,747.74	5,996.36	2,692.13	37.36	38.76	-86.52	-343.53	-2,987.44	915.96	840.13	75.83	12.080		
5,950.00	2,746.07	6,046.36	2,691.16	37.89	39.31	-86.56	-342.69	-3,037.42	915.90	838.99	76.91	11.908		
6,000.00	2,744.39	6,096.35	2,690.19	38.43	39.86	-86.61	-341.84	-3,087.40	915.84	837.84	78.00	11.741		
6,050.00	2,742.72	6,146.35	2,689.22	38.97	40.40	-86.65	-341.00	-3,137.38	915.78	836.69	79.09	11.579		
6,100.00	2,741.04	6,196.34	2,688.25	39.51	40.95	-86.70	-340.15	-3,187.36	915.72	835.54	80.18	11.421		
6,150.00	2,739.37	6,246.34	2,687.29	40.05	41.50	-86.74	-339.30	-3,237.34	915.67	834.39	81.27	11.267		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - 1H - OH - PERMIT

Survey Program:		0-MWD+IFR1+MS					Rule Assigned:				Offset Site Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance		Offset Well Error:		0.00 usft		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
6,200.00	2,737.69	6,296.33	2,686.32	40.59	42.05	-86.78	-338.46	-3,287.32	915.61	833.24	82.36	11.117		
6,250.00	2,736.02	6,346.33	2,685.35	41.13	42.60	-86.83	-337.61	-3,337.29	915.55	832.09	83.46	10.970		
6,300.00	2,734.34	6,396.32	2,684.38	41.67	43.14	-86.87	-336.76	-3,387.27	915.49	830.94	84.55	10.828		
6,350.00	2,732.67	6,446.32	2,683.41	42.22	43.69	-86.92	-335.92	-3,437.25	915.44	829.79	85.65	10.689		
6,400.00	2,730.99	6,496.31	2,682.44	42.76	44.24	-86.96	-335.07	-3,487.23	915.38	828.64	86.74	10.553		
6,450.00	2,729.32	6,546.31	2,681.47	43.30	44.79	-87.00	-334.23	-3,537.21	915.33	827.49	87.84	10.421		
6,500.00	2,727.64	6,596.30	2,680.51	43.85	45.34	-87.05	-333.38	-3,587.19	915.28	826.34	88.94	10.291		
6,550.00	2,725.97	6,646.30	2,679.54	44.39	45.89	-87.09	-332.53	-3,637.16	915.22	825.19	90.03	10.165		
6,600.00	2,724.29	6,696.29	2,678.57	44.93	46.45	-87.14	-331.69	-3,687.14	915.17	824.04	91.13	10.042		
6,650.00	2,722.62	6,746.29	2,677.60	45.48	47.00	-87.18	-330.84	-3,737.12	915.12	822.88	92.23	9.922		
6,700.00	2,720.94	6,796.28	2,676.63	46.03	47.55	-87.23	-330.00	-3,787.10	915.06	821.73	93.33	9.804		
6,750.00	2,719.26	6,846.28	2,675.66	46.57	48.10	-87.27	-329.15	-3,837.08	915.01	820.58	94.43	9.689		
6,800.00	2,717.59	6,896.27	2,674.69	47.12	48.65	-87.31	-328.30	-3,887.06	914.96	819.43	95.54	9.577		
6,850.00	2,715.91	6,946.27	2,673.73	47.66	49.20	-87.36	-327.46	-3,937.04	914.91	818.27	96.64	9.467		
6,900.00	2,714.24	6,996.26	2,672.76	48.21	49.76	-87.40	-326.61	-3,987.01	914.86	817.12	97.74	9.360		
6,950.00	2,712.56	7,046.26	2,671.79	48.76	50.31	-87.45	-325.76	-4,036.99	914.81	815.97	98.85	9.255		
7,000.00	2,710.89	7,096.25	2,670.82	49.31	50.86	-87.49	-324.92	-4,086.97	914.76	814.81	99.95	9.152		
7,050.00	2,709.21	7,146.25	2,669.85	49.85	51.42	-87.53	-324.07	-4,136.95	914.72	813.66	101.05	9.052		
7,100.00	2,707.54	7,196.24	2,668.88	50.40	51.97	-87.58	-323.23	-4,186.93	914.67	812.51	102.16	8.953		
7,150.00	2,705.86	7,246.24	2,667.92	50.95	52.52	-87.62	-322.38	-4,236.91	914.62	811.36	103.27	8.857		
7,200.00	2,704.19	7,296.23	2,666.95	51.50	53.08	-87.67	-321.53	-4,286.88	914.57	810.20	104.37	8.763		
7,250.00	2,702.51	7,346.23	2,665.98	52.05	53.63	-87.71	-320.69	-4,336.86	914.53	809.05	105.48	8.670		
7,300.00	2,700.84	7,396.22	2,665.01	52.60	54.18	-87.76	-319.84	-4,386.84	914.48	807.90	106.59	8.580		
7,350.00	2,699.16	7,446.22	2,664.04	53.15	54.74	-87.80	-318.99	-4,436.82	914.44	806.74	107.69	8.491		
7,400.00	2,697.49	7,496.21	2,663.07	53.70	55.29	-87.84	-318.15	-4,486.80	914.39	805.59	108.80	8.404		
7,450.00	2,695.81	7,546.21	2,662.10	54.25	55.85	-87.89	-317.30	-4,536.78	914.35	804.44	109.91	8.319		
7,500.00	2,694.14	7,596.20	2,661.14	54.80	56.40	-87.93	-316.46	-4,586.76	914.31	803.29	111.02	8.236		
7,550.00	2,692.46	7,646.20	2,660.17	55.35	56.96	-87.98	-315.61	-4,636.73	914.26	802.14	112.13	8.154		
7,600.00	2,690.79	7,696.19	2,659.20	55.90	57.51	-88.02	-314.76	-4,686.71	914.22	800.98	113.24	8.073		
7,650.00	2,689.11	7,746.19	2,658.23	56.46	58.07	-88.06	-313.92	-4,736.69	914.18	799.83	114.35	7.995		
7,700.00	2,687.44	7,796.18	2,657.26	57.01	58.62	-88.11	-313.07	-4,786.67	914.14	798.68	115.46	7.917		
7,750.00	2,685.76	7,846.18	2,656.29	57.56	59.18	-88.15	-312.22	-4,836.65	914.10	797.53	116.57	7.842		
7,800.00	2,684.09	7,896.17	2,655.32	58.11	59.74	-88.20	-311.38	-4,886.63	914.06	796.38	117.68	7.767		
7,850.00	2,682.41	7,946.17	2,654.36	58.66	60.29	-88.24	-310.53	-4,936.60	914.02	795.23	118.79	7.694		
7,900.00	2,680.74	7,996.16	2,653.39	59.22	60.85	-88.29	-309.69	-4,986.58	913.98	794.08	119.91	7.623		
7,950.00	2,679.06	8,046.16	2,652.42	59.77	61.40	-88.33	-308.84	-5,036.56	913.94	792.93	121.02	7.552		
8,000.00	2,677.38	8,096.15	2,651.45	60.32	61.96	-88.37	-307.99	-5,086.54	913.91	791.78	122.13	7.483		
8,023.95	2,676.58	8,119.42	2,651.00	60.59	62.22	-88.40	-307.60	-5,109.80	913.89	791.23	122.65	7.451		
8,050.00	2,675.71	8,119.42	2,651.00	60.87	62.22	-88.40	-307.60	-5,109.80	914.26	791.39	122.87	7.441		
8,071.66	2,674.98	8,119.42	2,651.00	61.11	62.22	-88.40	-307.60	-5,109.80	915.13	792.16	122.97	7.442		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE

Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - OFFSET: ARCO-FEDERAL 1 - OH - OH													Offset Site Error:
Survey Program: 150-INC-ONLY													Offset Well Error:
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	19.00	0.00	0.00	0.29	-79.68	329.49	-1,809.81	1,839.56				
50.00	50.00	69.00	50.00	0.92	1.05	-79.68	329.49	-1,809.81	1,839.56	1,837.58	1.98	931.173	
100.00	100.00	119.00	100.00	0.92	1.81	-79.68	329.49	-1,809.81	1,839.56	1,836.82	2.74	672.019	
150.00	150.00	169.00	150.00	1.23	2.62	-79.68	329.49	-1,809.81	1,839.56	1,835.71	3.85	478.135	
200.00	200.00	219.39	200.39	1.53	3.51	-79.68	329.52	-1,809.81	1,839.56	1,834.52	5.04	364.909	
250.00	250.00	269.00	250.00	1.74	4.39	-79.68	329.49	-1,809.81	1,839.56	1,833.42	6.13	299.896	
300.00	300.00	319.00	300.00	1.95	5.28	-79.68	329.49	-1,809.81	1,839.56	1,832.32	7.23	254.304	
350.00	350.00	369.14	350.14	2.21	6.17	-125.41	329.60	-1,809.81	1,839.83	1,831.49	8.34	220.536	
400.00	399.98	419.46	400.46	2.52	7.06	-125.44	329.55	-1,809.81	1,840.58	1,831.14	9.44	195.024	
450.00	449.93	468.93	449.93	2.76	7.95	-125.47	329.49	-1,809.81	1,841.83	1,831.32	10.51	175.244	
500.00	499.84	518.84	499.84	3.01	8.86	-125.52	329.49	-1,809.81	1,843.61	1,832.00	11.61	158.766	
550.00	549.68	568.69	549.68	3.24	9.78	-125.58	329.49	-1,809.81	1,845.89	1,833.19	12.70	145.333	
600.00	599.45	618.46	599.45	3.47	10.69	-125.66	329.49	-1,809.81	1,848.69	1,834.91	13.79	134.074	
650.00	649.13	668.17	649.17	3.70	11.60	-125.74	329.71	-1,809.81	1,852.05	1,837.18	14.87	124.560	
700.00	698.70	717.91	698.90	3.93	12.52	-125.84	329.69	-1,809.81	1,855.88	1,839.93	15.95	116.360	
750.00	748.15	767.52	748.51	4.16	13.43	-125.95	329.65	-1,809.81	1,860.24	1,843.22	17.03	109.262	
800.00	797.47	816.99	797.98	4.39	14.34	-126.08	329.57	-1,809.81	1,865.13	1,847.03	18.10	103.049	
850.00	846.63	865.65	846.63	4.62	15.24	-126.22	329.49	-1,809.81	1,870.55	1,851.38	19.17	97.593	
900.00	895.62	914.64	895.62	4.85	16.21	-126.36	329.49	-1,809.81	1,876.52	1,856.22	20.30	92.418	
950.00	944.44	963.46	944.44	5.08	17.18	-126.52	329.49	-1,809.81	1,883.05	1,861.61	21.44	87.826	
1,000.00	993.06	1,012.08	993.06	5.31	18.14	-126.68	329.49	-1,809.81	1,890.14	1,867.56	22.57	83.730	
1,050.00	1,041.46	1,060.99	1,041.97	5.55	19.11	-126.84	329.95	-1,809.81	1,897.85	1,874.13	23.72	80.022	
2,800.00	2,596.16	2,615.30	2,596.16	11.49	48.94	-16.75	329.49	-1,809.81	1,886.15	1,828.17	57.98	32.531	
2,850.00	2,625.47	2,644.61	2,625.47	11.55	49.51	-15.38	329.49	-1,809.81	1,846.22	1,787.67	58.54	31.537	
2,900.00	2,652.10	2,671.24	2,652.10	11.62	50.04	-14.06	329.49	-1,809.81	1,804.32	1,745.26	59.06	30.553	
2,950.00	2,677.11	2,696.16	2,677.01	11.72	50.53	-14.15	331.09	-1,809.81	1,761.18	1,701.67	59.51	29.594	
3,000.00	2,702.11	2,721.05	2,701.90	11.82	51.01	-14.49	331.07	-1,809.81	1,718.23	1,658.26	59.97	28.651	
3,050.00	2,727.11	2,745.94	2,726.79	11.96	51.50	-14.85	331.03	-1,809.81	1,675.30	1,614.87	60.43	27.722	
3,100.00	2,752.11	2,770.83	2,751.68	12.10	51.99	-15.23	330.99	-1,809.81	1,632.39	1,571.50	60.90	26.806	
3,150.00	2,775.51	2,794.12	2,774.97	12.26	52.45	-18.05	330.93	-1,809.81	1,588.65	1,527.29	61.36	25.890	
3,200.00	2,794.99	2,813.51	2,794.36	12.45	52.83	-22.44	330.87	-1,809.81	1,543.08	1,481.31	61.77	24.981	
3,250.00	2,810.38	2,828.83	2,809.68	12.68	53.13	-29.21	330.82	-1,809.81	1,496.03	1,433.93	62.11	24.088	
3,300.00	2,821.57	2,839.96	2,820.81	12.93	53.35	-40.32	330.77	-1,809.81	1,447.87	1,385.50	62.37	23.216	
3,350.00	2,828.46	2,846.83	2,827.67	13.21	53.48	-59.18	330.75	-1,809.81	1,398.97	1,336.42	62.55	22.366	
3,400.00	2,831.02	2,849.37	2,830.22	13.51	53.53	-87.18	330.74	-1,809.81	1,349.70	1,287.04	62.66	21.541	
3,450.00	2,829.83	2,848.18	2,829.02	13.83	53.51	-100.82	330.74	-1,809.81	1,300.41	1,237.71	62.70	20.740	
3,500.00	2,828.15	2,846.51	2,827.35	14.16	53.47	-100.40	330.75	-1,809.81	1,251.19	1,188.45	62.74	19.942	
3,550.00	2,826.48	2,844.84	2,825.68	14.51	53.44	-99.98	330.76	-1,809.81	1,202.03	1,139.24	62.79	19.143	
3,600.00	2,824.80	2,843.17	2,824.01	14.87	53.41	-99.56	330.76	-1,809.81	1,152.95	1,090.09	62.85	18.344	
3,650.00	2,823.13	2,841.50	2,822.34	15.25	53.38	-99.13	330.77	-1,809.81	1,103.94	1,041.01	62.92	17.544	
3,700.00	2,821.45	2,839.83	2,820.67	15.63	53.34	-98.71	330.78	-1,809.81	1,055.02	992.01	63.01	16.745	
3,750.00	2,819.78	2,838.15	2,819.00	16.03	53.31	-98.29	330.78	-1,809.81	1,006.20	943.10	63.10	15.945	
3,800.00	2,818.10	2,836.48	2,817.33	16.43	53.28	-97.86	330.79	-1,809.81	957.51	894.29	63.22	15.146	
3,850.00	2,816.43	2,834.81	2,815.66	16.85	53.24	-97.44	330.79	-1,809.81	908.95	845.60	63.35	14.347	
3,900.00	2,814.75	2,833.14	2,813.99	17.27	53.21	-97.01	330.80	-1,809.81	860.55	797.04	63.51	13.550	
3,950.00	2,813.08	2,831.47	2,812.32	17.71	53.18	-96.58	330.81	-1,809.81	812.35	748.65	63.70	12.753	
4,000.00	2,811.40	2,829.80	2,810.65	18.14	53.15	-96.15	330.81	-1,809.81	764.37	700.45	63.92	11.958	
4,050.00	2,809.73	2,828.13	2,808.98	18.59	53.11	-95.72	330.82	-1,809.81	716.67	652.48	64.19	11.166	
4,100.00	2,808.05	2,826.46	2,807.31	19.04	53.08	-95.29	330.82	-1,809.81	669.29	604.79	64.50	10.377	
4,150.00	2,806.38	2,824.79	2,805.64	19.50	53.05	-94.86	330.83	-1,809.81	622.33	557.45	64.88	9.592	
4,200.00	2,804.70	2,823.12	2,803.97	19.96	53.02	-94.43	330.84	-1,809.81	575.87	510.53	65.33	8.814	
4,250.00	2,803.02	2,821.45	2,802.30	20.43	52.98	-94.00	330.84	-1,809.81	530.05	464.16	65.89	8.045	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE

Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - OFFSET: ARCO-FEDERAL 1 - OH - OH											Offset Site Error:
											0.00 usft
Survey Program:	Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Rule Assigned:	Distance	Minimum	Separation	Warning	Offset Well Error:
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Reference	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Separation (usft)	Factor		0.00 usft
4,300.00	2,801.35	2,819.78	20.90	-93.57	330.85	-1,809.81	485.04	66.56	7.287		
4,350.00	2,799.67	2,818.11	21.37	-93.14	330.85	-1,809.81	441.11	67.38	6.546		
4,400.00	2,798.00	2,816.44	21.85	-92.71	330.86	-1,809.81	398.61	68.39	5.829		
4,450.00	2,796.32	2,814.77	22.34	-92.27	330.86	-1,809.81	358.04	69.61	5.143		
4,500.00	2,794.65	2,813.10	22.83	-91.84	330.87	-1,809.81	320.14	71.08	4.504		
4,550.00	2,792.97	2,811.43	23.32	-91.41	330.88	-1,809.81	285.98	72.79	3.929		
4,600.00	2,791.30	2,809.76	23.81	-90.97	330.88	-1,809.81	257.04	74.62	3.445		
4,650.00	2,789.62	2,808.09	24.31	-90.54	330.89	-1,809.81	235.26	76.33	3.082		
4,700.00	2,787.95	2,806.42	24.81	-90.11	330.89	-1,809.81	222.76	77.45	2.876		
4,732.32	2,786.87	2,805.35	25.14	-89.83	330.89	-1,809.81	220.41	77.67	2.838 CC, ES, SF		
4,750.00	2,786.27	2,804.76	25.31	-89.67	330.90	-1,809.81	221.12	77.60	2.850		
4,800.00	2,784.60	2,803.09	25.82	-89.24	330.90	-1,809.81	230.56	76.68	3.007		
4,850.00	2,782.92	2,801.42	26.33	-88.80	330.91	-1,809.81	249.83	75.05	3.329		
4,900.00	2,781.25	2,799.75	26.84	-88.37	330.91	-1,809.81	276.89	73.17	3.784		
4,950.00	2,779.57	2,798.08	27.35	-87.94	330.92	-1,809.81	309.70	71.37	4.339		
5,000.00	2,777.90	2,796.41	27.86	-87.51	330.92	-1,809.81	346.63	69.79	4.967		
5,050.00	2,776.22	2,794.74	28.38	-87.07	330.93	-1,809.81	386.51	68.46	5.646		
5,100.00	2,774.55	2,793.07	28.90	-86.64	330.93	-1,809.81	428.51	67.35	6.362		
5,150.00	2,772.87	2,791.40	29.42	-86.21	330.93	-1,809.81	472.06	66.45	7.105		
5,200.00	2,771.20	2,789.73	29.94	-85.78	330.94	-1,809.81	516.78	65.70	7.866		
5,250.00	2,769.52	2,788.07	30.46	-85.35	330.94	-1,809.81	562.39	65.08	8.641		
5,300.00	2,767.85	2,786.40	30.98	-84.91	330.95	-1,809.81	608.67	64.57	9.427		
5,350.00	2,766.17	2,784.73	31.51	-84.48	330.95	-1,809.81	655.51	64.14	10.220		
5,400.00	2,764.50	2,783.06	32.03	-84.06	330.96	-1,809.81	702.77	63.77	11.020		
5,450.00	2,762.82	2,781.39	32.56	-83.63	330.96	-1,809.81	750.38	63.47	11.823		
5,500.00	2,761.14	2,779.72	33.09	-83.20	330.97	-1,809.81	798.29	63.20	12.630		
5,550.00	2,759.47	2,778.06	33.62	-82.77	330.97	-1,809.81	846.43	62.98	13.440		
5,600.00	2,757.79	2,776.39	34.15	-82.35	330.97	-1,809.81	894.77	62.78	14.252		
5,650.00	2,756.12	2,774.72	34.68	-81.92	330.98	-1,809.81	943.28	62.61	15.066		
5,700.00	2,754.44	2,773.05	35.22	-81.49	330.98	-1,809.81	991.94	62.46	15.881		
5,750.00	2,752.77	2,771.38	35.75	-81.07	330.98	-1,809.81	1,040.72	62.33	16.697		
5,800.00	2,751.09	2,769.71	36.28	-80.65	330.99	-1,809.81	1,089.61	62.21	17.514		
5,850.00	2,749.42	2,768.05	36.82	-80.23	330.99	-1,809.81	1,138.60	62.11	18.332		
5,900.00	2,747.74	2,766.38	37.36	-79.81	331.00	-1,809.81	1,187.66	62.02	19.151		
5,950.00	2,746.07	2,764.71	37.89	-79.39	331.00	-1,809.81	1,236.80	61.93	19.969		
6,000.00	2,744.39	2,763.04	38.43	-78.97	331.00	-1,809.81	1,286.00	61.86	20.789		
6,050.00	2,742.72	2,761.38	38.97	-78.55	331.01	-1,809.81	1,335.26	61.79	21.609		
6,100.00	2,741.04	2,759.71	39.51	-78.14	331.01	-1,809.81	1,384.57	61.73	22.429		
6,150.00	2,739.37	2,758.04	40.05	-77.72	331.01	-1,809.81	1,433.93	61.68	23.249		
6,200.00	2,737.69	2,756.37	40.59	-77.31	331.02	-1,809.81	1,483.33	61.63	24.070		
6,250.00	2,736.02	2,754.71	41.13	-76.90	331.02	-1,809.81	1,532.76	61.58	24.890		
6,300.00	2,734.34	2,753.04	41.67	-76.48	331.02	-1,809.81	1,582.23	61.54	25.711		
6,350.00	2,732.67	2,751.37	42.22	-76.08	331.02	-1,809.81	1,631.73	61.50	26.532		
6,400.00	2,730.99	2,749.71	42.76	-75.67	331.03	-1,809.81	1,681.26	61.47	27.353		
6,450.00	2,729.32	2,748.04	43.30	-75.26	331.03	-1,809.81	1,730.81	61.43	28.174		
6,500.00	2,727.64	2,746.37	43.85	-74.86	331.03	-1,809.81	1,780.39	61.40	28.995		
6,550.00	2,725.97	2,744.70	44.39	-74.45	331.04	-1,809.81	1,829.99	61.38	29.815		
6,600.00	2,724.29	2,743.04	44.93	-74.05	331.04	-1,809.81	1,879.61	61.35	30.636		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - OFFSET: POLO 'AOP' FEDERAL 1 - OH - OH

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Survey Program: 265-INC-ONLY		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned:		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)			
4,200.00	2,804.70	2,823.73	2,804.39	19.96	57.03	-106.34	361.82	-3,138.16	1,872.66	1,806.22	66.44	28.187	
4,250.00	2,803.02	2,822.06	2,802.72	20.43	56.99	-105.93	361.83	-3,138.16	1,823.02	1,756.55	66.47	27.427	
4,300.00	2,801.35	2,820.40	2,801.05	20.90	56.96	-105.51	361.83	-3,138.16	1,773.39	1,706.89	66.50	26.666	
4,350.00	2,799.67	2,818.73	2,799.38	21.37	56.93	-105.09	361.83	-3,138.16	1,723.79	1,657.24	66.54	25.904	
4,400.00	2,798.00	2,817.06	2,797.71	21.85	56.89	-104.67	361.83	-3,138.16	1,674.20	1,607.61	66.59	25.142	
4,450.00	2,796.32	2,815.39	2,796.04	22.34	56.86	-104.24	361.84	-3,138.16	1,624.64	1,558.00	66.64	24.379	
4,500.00	2,794.65	2,813.72	2,794.38	22.83	56.83	-103.82	361.84	-3,138.16	1,575.11	1,508.41	66.70	23.615	
4,550.00	2,792.97	2,812.05	2,792.71	23.32	56.80	-103.39	361.84	-3,138.16	1,525.60	1,458.84	66.77	22.850	
4,600.00	2,791.30	2,810.39	2,791.04	23.81	56.76	-102.96	361.84	-3,138.16	1,476.13	1,409.29	66.84	22.085	
4,650.00	2,789.62	2,808.72	2,789.37	24.31	56.73	-102.53	361.85	-3,138.16	1,426.69	1,359.77	66.92	21.319	
4,700.00	2,787.95	2,807.05	2,787.70	24.81	56.70	-102.10	361.85	-3,138.16	1,377.29	1,310.28	67.01	20.553	
4,750.00	2,786.27	2,805.38	2,786.03	25.31	56.66	-101.67	361.85	-3,138.16	1,327.93	1,260.82	67.12	19.786	
4,800.00	2,784.60	2,803.71	2,784.37	25.82	56.63	-101.24	361.85	-3,138.16	1,278.62	1,211.39	67.23	19.018	
4,850.00	2,782.92	2,802.05	2,782.70	26.33	56.60	-100.80	361.85	-3,138.16	1,229.37	1,162.01	67.36	18.251	
4,900.00	2,781.25	2,800.38	2,781.03	26.84	56.57	-100.37	361.86	-3,138.16	1,180.17	1,112.67	67.51	17.482	
4,950.00	2,779.57	2,798.71	2,779.36	27.35	56.53	-99.93	361.86	-3,138.16	1,131.04	1,063.37	67.67	16.714	
5,000.00	2,777.90	2,797.04	2,777.70	27.86	56.50	-99.49	361.86	-3,138.16	1,081.99	1,014.14	67.86	15.945	
5,050.00	2,776.22	2,795.37	2,776.03	28.38	56.47	-99.05	361.86	-3,138.16	1,033.03	964.96	68.07	15.176	
5,100.00	2,774.55	2,793.71	2,774.36	28.90	56.43	-98.61	361.86	-3,138.16	984.17	915.86	68.31	14.408	
5,150.00	2,772.87	2,792.04	2,772.69	29.42	56.40	-98.17	361.86	-3,138.16	935.43	866.84	68.58	13.639	
5,200.00	2,771.20	2,790.37	2,771.03	29.94	56.37	-97.72	361.87	-3,138.16	886.82	817.92	68.90	12.872	
5,250.00	2,769.52	2,788.70	2,769.36	30.46	56.34	-97.28	361.87	-3,138.16	838.37	769.12	69.26	12.105	
5,300.00	2,767.85	2,787.04	2,767.69	30.98	56.30	-96.84	361.87	-3,138.16	790.12	720.45	69.67	11.341	
5,350.00	2,766.17	2,785.37	2,766.02	31.51	56.27	-96.39	361.87	-3,138.16	742.09	671.94	70.15	10.578	
5,400.00	2,764.50	2,783.70	2,764.36	32.03	56.24	-95.95	361.87	-3,138.16	694.33	623.62	70.72	9.819	
5,450.00	2,762.82	2,782.04	2,762.69	32.56	56.21	-95.50	361.87	-3,138.16	646.92	575.54	71.37	9.064	
5,500.00	2,761.14	2,780.37	2,761.02	33.09	56.17	-95.05	361.87	-3,138.16	599.91	527.76	72.15	8.314	
5,550.00	2,759.47	2,778.70	2,759.36	33.62	56.14	-94.60	361.87	-3,138.16	553.43	480.35	73.08	7.573	
5,600.00	2,757.79	2,777.04	2,757.69	34.15	56.11	-94.15	361.88	-3,138.16	507.60	433.42	74.18	6.843	
5,650.00	2,756.12	2,775.37	2,756.02	34.68	56.07	-93.70	361.88	-3,138.16	462.64	387.13	75.51	6.127	
5,700.00	2,754.44	2,773.70	2,754.36	35.22	56.04	-93.25	361.88	-3,138.16	418.82	341.70	77.12	5.431	
5,750.00	2,752.77	2,772.04	2,752.69	35.75	56.01	-92.80	361.88	-3,138.16	376.53	297.47	79.06	4.763	
5,800.00	2,751.09	2,770.37	2,751.02	36.28	55.98	-92.35	361.88	-3,138.16	336.35	254.95	81.40	4.132	
5,850.00	2,749.42	2,768.70	2,749.36	36.82	55.94	-91.90	361.88	-3,138.16	299.15	214.97	84.18	3.554	
5,900.00	2,747.74	2,767.04	2,747.69	37.36	55.91	-91.45	361.88	-3,138.16	266.15	178.82	87.33	3.048	
5,950.00	2,746.07	2,765.37	2,746.02	37.89	55.88	-91.00	361.88	-3,138.16	239.12	148.53	90.59	2.640	
6,000.00	2,744.39	2,763.70	2,744.36	38.43	55.84	-90.55	361.88	-3,138.16	220.27	126.90	93.37	2.359	
6,050.00	2,742.72	2,762.04	2,742.69	38.97	55.81	-90.10	361.88	-3,138.16	211.78	116.99	94.78	2.234	
6,061.70	2,742.33	2,761.65	2,742.30	39.10	55.80	-89.99	361.88	-3,138.16	211.45	116.61	94.84	2.230 CC, ES, SF	
6,100.00	2,741.04	2,760.37	2,741.03	39.51	55.78	-89.65	361.88	-3,138.16	214.88	120.64	94.25	2.280	
6,150.00	2,739.37	2,758.71	2,739.36	40.05	55.75	-89.20	361.88	-3,138.16	229.12	137.12	92.00	2.490	
6,200.00	2,737.69	2,757.03	2,737.69	40.59	55.71	-88.75	361.07	-3,138.16	253.29	164.40	88.89	2.849	
6,250.00	2,736.02	2,755.36	2,736.02	41.13	55.68	-88.30	361.07	-3,138.16	283.67	198.04	85.63	3.313	
6,300.00	2,734.34	2,753.68	2,734.34	41.67	55.65	-87.85	361.07	-3,138.16	319.02	236.38	82.64	3.860	
6,350.00	2,732.67	2,752.01	2,732.67	42.22	55.61	-87.40	361.07	-3,138.16	357.87	277.80	80.07	4.469	
6,400.00	2,730.99	2,750.33	2,730.99	42.76	55.58	-86.95	361.07	-3,138.16	399.21	321.28	77.92	5.123	
6,450.00	2,729.32	2,748.66	2,729.32	43.30	55.55	-86.49	361.07	-3,138.16	442.33	366.19	76.14	5.809	
6,500.00	2,727.64	2,746.98	2,727.64	43.85	55.52	-86.04	361.07	-3,138.16	486.76	412.10	74.66	6.520	
6,550.00	2,725.97	2,745.31	2,725.97	44.39	55.48	-85.60	361.07	-3,138.16	532.18	458.75	73.43	7.247	
6,600.00	2,724.29	2,743.63	2,724.29	44.93	55.45	-85.15	361.07	-3,138.16	578.35	505.95	72.40	7.988	
6,650.00	2,722.62	2,741.95	2,722.62	45.48	55.42	-84.70	361.07	-3,138.16	625.10	553.57	71.54	8.738	
6,700.00	2,720.94	2,740.28	2,720.94	46.03	55.38	-84.25	361.07	-3,138.16	672.32	601.52	70.80	9.496	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - OFFSET: POLO 'AOP' FEDERAL 1 - OH - OH

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Survey Program: 265-INC-ONLY		Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned:		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Reference	Offset		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
6,750.00	2,719.26	2,738.60	2,719.26	46.57	55.35	-83.80			361.07	-3,138.16	719.91	649.73	70.18	10.258	
6,800.00	2,717.59	2,736.93	2,717.59	47.12	55.32	-83.36			361.07	-3,138.16	767.80	698.16	69.64	11.025	
6,850.00	2,715.91	2,735.25	2,715.91	47.66	55.29	-82.91			361.07	-3,138.16	815.94	746.76	69.18	11.795	
6,900.00	2,714.24	2,733.58	2,714.24	48.21	55.25	-82.47			361.07	-3,138.16	864.29	795.51	68.78	12.566	
6,950.00	2,712.56	2,731.90	2,712.56	48.76	55.22	-82.02			361.07	-3,138.16	912.81	844.39	68.43	13.340	
7,000.00	2,710.89	2,730.23	2,710.89	49.31	55.19	-81.58			361.07	-3,138.16	961.49	893.36	68.12	14.114	
7,050.00	2,709.21	2,728.55	2,709.21	49.85	55.15	-81.14			361.07	-3,138.16	1,010.29	942.43	67.85	14.890	
7,100.00	2,707.54	2,726.88	2,707.54	50.40	55.12	-80.70			361.07	-3,138.16	1,059.19	991.58	67.61	15.665	
7,150.00	2,705.86	2,725.20	2,705.86	50.95	55.09	-80.26			361.07	-3,138.16	1,108.20	1,040.80	67.40	16.442	
7,200.00	2,704.19	2,723.53	2,704.19	51.50	55.05	-79.82			361.07	-3,138.16	1,157.28	1,090.07	67.21	17.218	
7,250.00	2,702.51	2,721.85	2,702.51	52.05	55.02	-79.38			361.07	-3,138.16	1,206.44	1,139.40	67.05	17.994	
7,300.00	2,700.84	2,720.18	2,700.84	52.60	54.99	-78.95			361.07	-3,138.16	1,255.67	1,188.77	66.90	18.771	
7,350.00	2,699.16	2,718.50	2,699.16	53.15	54.96	-78.51			361.07	-3,138.16	1,304.95	1,238.19	66.76	19.547	
7,400.00	2,697.49	2,716.83	2,697.49	53.70	54.92	-78.08			361.07	-3,138.16	1,354.28	1,287.64	66.64	20.323	
7,450.00	2,695.81	2,715.15	2,695.81	54.25	54.89	-77.65			361.07	-3,138.16	1,403.65	1,337.12	66.53	21.099	
7,500.00	2,694.14	2,713.48	2,694.14	54.80	54.86	-77.22			361.07	-3,138.16	1,453.07	1,386.64	66.43	21.874	
7,550.00	2,692.46	2,711.80	2,692.46	55.35	54.82	-76.79			361.07	-3,138.16	1,502.52	1,436.19	66.34	22.649	
7,600.00	2,690.79	2,710.13	2,690.79	55.90	54.79	-76.36			361.07	-3,138.16	1,552.01	1,485.75	66.26	23.424	
7,650.00	2,689.11	2,708.45	2,689.11	56.46	54.76	-75.93			361.07	-3,138.16	1,601.53	1,535.35	66.18	24.199	
7,700.00	2,687.44	2,706.78	2,687.44	57.01	54.72	-75.51			361.07	-3,138.16	1,651.07	1,584.96	66.11	24.973	
7,750.00	2,685.76	2,705.10	2,685.76	57.56	54.69	-75.09			361.07	-3,138.16	1,700.64	1,634.59	66.05	25.747	
7,800.00	2,684.09	2,703.43	2,684.09	58.11	54.66	-74.67			361.07	-3,138.16	1,750.23	1,684.24	65.99	26.521	
7,850.00	2,682.41	2,701.75	2,682.41	58.66	54.63	-74.25			361.07	-3,138.16	1,799.85	1,733.90	65.94	27.294	
7,900.00	2,680.74	2,700.07	2,680.74	59.22	54.59	-73.83			361.07	-3,138.16	1,849.48	1,783.58	65.90	28.067	
7,950.00	2,679.06	2,698.40	2,679.06	59.77	54.56	-73.41			361.07	-3,138.16	1,899.13	1,833.28	65.85	28.840	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE

Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - OFFSET: SERRANO FEDERAL 002 - OH - OH

Survey Program: 400-UNKNOWN													Offset Site Error: 0.00 usft					
Reference Offset				Semi Major Axis					Offset Wellbore Centre				Rule Assigned: Distance				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning					
0.00	0.00	0.00	19.00	0.00	0.00	71.39	281.58	836.40	882.73									
50.00	50.00	31.00	50.00	0.92	1.20	71.39	281.58	836.40	882.52	880.40	2.12	415.520						
100.00	100.00	81.00	100.00	0.92	3.13	71.39	281.58	836.40	882.52	878.46	4.06	217.429						
150.00	150.00	131.00	150.00	1.23	5.07	71.39	281.58	836.40	882.52	876.23	6.29	140.196						
200.00	200.00	181.00	200.00	1.53	7.00	71.39	281.58	836.40	882.52	873.99	8.53	103.449						
250.00	250.00	231.00	250.00	1.74	8.94	71.39	281.58	836.40	882.52	871.84	10.68	82.634						
300.00	300.00	281.00	300.00	1.95	10.87	71.39	281.58	836.40	882.52	869.69	12.83	68.793						
350.00	350.00	331.00	350.00	2.21	12.81	25.68	281.58	836.40	882.13	867.12	15.01	58.762						
400.00	399.98	380.98	399.98	2.52	14.74	25.73	281.58	836.40	880.95	863.73	17.22	51.152						
450.00	449.93	430.93	449.93	2.76	16.72	25.81	281.58	836.40	878.99	859.56	19.42	45.254						
500.00	499.84	480.84	499.84	3.01	18.71	25.92	281.58	836.40	876.24	854.59	21.65	40.474						
550.00	549.68	530.68	549.68	3.24	20.71	26.06	281.58	836.40	872.71	848.85	23.86	36.578						
600.00	599.45	580.45	599.45	3.47	22.70	26.24	281.58	836.40	868.40	842.34	26.07	33.317						
650.00	649.13	630.13	649.13	3.70	24.69	26.45	281.58	836.40	863.33	835.06	28.26	30.548						
700.00	698.70	679.70	698.70	3.93	26.67	26.70	281.58	836.40	857.48	827.02	30.45	28.157						
750.00	748.15	729.15	748.15	4.16	28.65	26.98	281.58	836.40	850.87	818.23	32.64	26.070						
800.00	797.47	778.47	797.47	4.39	30.62	27.30	281.58	836.40	843.50	808.69	34.82	24.227						
850.00	846.63	827.63	846.63	4.62	32.59	27.66	281.58	836.40	835.39	798.40	36.99	22.585						
900.00	895.62	876.62	895.62	4.85	34.54	28.07	281.58	836.40	826.54	787.39	39.15	21.111						
950.00	944.44	925.44	944.44	5.08	36.50	28.52	281.58	836.40	816.96	775.65	41.31	19.777						
1,000.00	993.06	974.06	993.06	5.31	38.44	29.01	281.58	836.40	806.66	763.21	43.46	18.562						
1,050.00	1,041.46	1,022.46	1,041.46	5.55	40.38	29.56	281.58	836.40	795.66	750.07	45.60	17.450						
1,100.00	1,089.64	1,070.64	1,089.64	5.79	42.31	30.15	281.58	836.40	783.97	736.25	47.72	16.427						
1,150.00	1,137.58	1,118.58	1,137.58	6.03	44.22	30.81	281.58	836.40	771.60	721.76	49.84	15.481						
1,200.00	1,185.27	1,166.27	1,185.27	6.26	46.13	31.52	281.58	836.40	758.58	706.63	51.95	14.603						
1,250.00	1,232.68	1,213.68	1,232.68	6.51	48.03	32.30	281.58	836.40	744.92	690.88	54.04	13.785						
1,300.00	1,279.82	1,260.82	1,279.82	6.75	49.91	33.15	281.58	836.40	730.64	674.53	56.12	13.020						
1,350.00	1,326.65	1,307.65	1,326.65	6.99	51.79	34.08	281.58	836.40	715.78	657.60	58.18	12.303						
1,400.00	1,373.17	1,354.17	1,373.17	7.24	53.65	35.09	281.58	836.40	700.35	640.13	60.23	11.629						
1,450.00	1,419.36	1,400.36	1,419.36	7.48	55.49	36.18	281.58	836.40	684.40	622.15	62.25	10.994						
1,500.00	1,465.21	1,446.21	1,465.21	7.73	57.33	37.37	281.58	836.40	667.96	603.69	64.26	10.394						
1,550.00	1,510.71	1,491.71	1,510.71	7.98	59.15	38.67	281.58	836.40	651.06	584.81	66.25	9.827						
1,600.00	1,555.84	1,536.84	1,555.84	8.23	60.95	40.07	281.58	836.40	633.76	565.54	68.22	9.290						
1,650.00	1,600.59	1,581.59	1,600.59	8.47	62.74	41.60	281.58	836.40	616.11	545.95	70.16	8.782						
1,700.00	1,644.94	1,625.94	1,644.94	8.72	64.52	43.26	281.58	836.40	598.18	526.10	72.07	8.299						
1,750.00	1,688.88	1,669.88	1,688.88	8.97	66.28	45.05	281.58	836.40	580.03	506.06	73.96	7.842						
1,800.00	1,732.39	1,713.39	1,732.39	9.22	68.02	47.00	281.58	836.40	561.74	485.92	75.82	7.409						
1,850.00	1,775.69	1,756.69	1,775.69	9.44	69.75	48.78	281.58	836.40	543.69	466.06	77.63	7.004						
1,900.00	1,819.21	1,800.21	1,819.21	9.66	71.49	53.14	281.58	836.40	526.73	447.31	79.43	6.632						
1,950.00	1,863.85	1,844.85	1,863.85	9.89	73.27	60.28	281.58	836.40	513.35	432.08	81.27	6.316						
2,000.00	1,909.52	1,890.52	1,909.52	10.12	75.10	68.87	281.58	836.40	503.90	420.76	83.14	6.061						
2,050.00	1,956.00	1,937.00	1,956.00	10.34	76.96	79.14	281.58	836.40	498.40	413.37	85.03	5.862						
2,095.46	1,998.77	1,979.77	1,998.77	10.52	78.67	90.00	281.58	836.40	496.80	410.05	86.75	5.727	CC					
2,100.00	2,003.06	1,984.06	2,003.06	10.54	78.84	91.16	281.58	836.40	496.82	409.89	86.92	5.715	ES					
2,150.00	2,050.47	2,031.47	2,050.47	10.74	80.74	104.58	281.58	836.40	499.06	410.24	88.82	5.619						
2,200.00	2,097.99	2,078.99	2,097.99	10.92	82.64	118.56	281.58	836.40	505.00	414.31	90.69	5.568						
2,250.00	2,145.41	2,126.41	2,145.41	11.07	84.54	131.96	281.58	836.40	514.49	421.96	92.53	5.560	SF					
2,300.00	2,192.48	2,173.48	2,192.48	11.20	86.42	143.91	281.58	836.40	527.35	433.00	94.34	5.590						
2,350.00	2,238.99	2,219.99	2,238.99	11.29	88.28	154.08	281.58	836.40	543.39	447.25	96.14	5.652						
2,400.00	2,284.69	2,265.69	2,284.69	11.34	90.11	162.54	281.58	836.40	562.44	464.52	97.92	5.744						
2,450.00	2,329.37	2,310.37	2,329.37	11.38	91.89	169.57	281.58	836.40	584.33	484.65	99.68	5.862						
2,500.00	2,372.82	2,353.82	2,372.82	11.40	93.63	175.47	281.58	836.40	608.91	507.49	101.41	6.004						

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE

Anticollision Report



Company:	SPUR ENERGY PARTNERS, LLC	Local Co-ordinate Reference:	Well 10H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	TVD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Reference Site:	POLO AOP FEDERAL COM	MD Reference:	RKB = 20' @ 3482.00usft (AKITA 57)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.17 Single User Db
Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Offset Design: POLO AOP FEDERAL COM - OFFSET: SERRANO FEDERAL 002 - OH - OH

Survey Program: 400-UNKNOWN										Offset Site Error: 0.00 usft	
Rule Assigned:										Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Minimum Separation (usft)	Warning
2,550.00	2,414.81	2,395.81	2,414.81	11.41	95.31	-179.50	281.58	836.40	636.02	532.92	6.169
2,600.00	2,455.15	2,436.15	2,455.15	11.41	96.93	-175.10	281.58	836.40	665.52	560.79	6.355
2,650.00	2,493.64	2,474.64	2,493.64	11.42	98.47	-171.13	281.58	836.40	697.28	590.99	6.560
2,700.00	2,530.08	2,511.08	2,530.08	11.43	99.92	-167.45	281.58	836.40	731.17	623.39	6.784
2,750.00	2,564.32	2,545.32	2,564.32	11.46	101.29	-163.90	281.58	836.40	767.06	657.88	7.026
2,800.00	2,596.16	2,577.16	2,596.16	11.49	102.57	-160.35	281.58	836.40	804.81	694.32	7.284
2,850.00	2,625.47	2,606.47	2,625.47	11.55	103.74	-156.65	281.58	836.40	844.27	732.58	7.559
2,900.00	2,652.10	2,633.10	2,652.10	11.62	104.80	-152.65	281.58	836.40	885.30	772.51	7.849
2,950.00	2,677.11	2,658.11	2,677.11	11.72	105.80	-153.33	281.58	836.40	927.23	813.43	8.148
3,000.00	2,702.11	2,683.11	2,702.11	11.82	106.80	-154.40	281.58	836.40	969.28	854.48	8.443
3,050.00	2,727.11	2,708.11	2,727.11	11.96	107.80	-155.39	281.58	836.40	1,011.44	895.63	8.734
3,100.00	2,752.11	2,733.11	2,752.11	12.10	108.80	-156.30	281.58	836.40	1,053.69	936.88	9.020
3,150.00	2,775.51	2,756.51	2,775.51	12.26	109.74	-153.90	281.58	836.40	1,096.88	979.10	9.313
3,200.00	2,794.99	2,775.99	2,794.99	12.45	110.52	-149.98	281.58	836.40	1,141.96	1,023.37	9.629
3,250.00	2,810.38	2,791.38	2,810.38	12.68	111.14	-143.97	281.58	836.40	1,188.62	1,069.37	9.968
3,300.00	2,821.57	2,802.57	2,821.57	12.93	111.58	-134.27	281.58	836.40	1,236.48	1,116.76	10.328
3,350.00	2,828.46	2,809.46	2,828.46	13.21	111.86	-117.94	281.58	836.40	1,285.19	1,165.18	10.709
3,400.00	2,831.02	2,812.02	2,831.02	13.51	111.96	-92.52	281.58	836.40	1,334.36	1,214.23	11.108
3,450.00	2,829.83	2,810.83	2,829.83	13.83	111.91	-78.55	281.58	836.40	1,383.64	1,263.56	11.523
3,500.00	2,828.15	2,809.15	2,828.15	14.16	111.85	-78.14	281.58	836.40	1,432.97	1,312.95	12.002
3,550.00	2,826.48	2,807.48	2,826.48	14.51	111.78	-77.74	281.58	836.40	1,482.34	1,362.38	12.357
3,600.00	2,824.80	2,805.80	2,824.80	14.87	111.71	-77.33	281.58	836.40	1,531.74	1,411.84	12.775
3,650.00	2,823.13	2,804.13	2,823.13	15.25	111.65	-76.93	281.58	836.40	1,581.19	1,461.34	13.194
3,700.00	2,821.45	2,802.45	2,821.45	15.63	111.58	-76.53	281.58	836.40	1,630.66	1,510.88	13.613
3,750.00	2,819.78	2,800.78	2,819.78	16.03	111.51	-76.13	281.58	836.40	1,680.17	1,560.44	14.033
3,800.00	2,818.10	2,799.10	2,818.10	16.43	111.44	-75.73	281.58	836.40	1,729.70	1,610.03	14.454
3,850.00	2,816.43	2,797.43	2,816.43	16.85	111.38	-75.33	281.58	836.40	1,779.25	1,659.64	14.875
3,900.00	2,814.75	2,795.75	2,814.75	17.27	111.31	-74.93	281.58	836.40	1,828.83	1,709.28	15.297
3,950.00	2,813.08	2,794.08	2,813.08	17.71	111.24	-74.54	281.58	836.40	1,878.43	1,758.93	15.719

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



PROTOTYPE

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Reference Design:	PERMIT	Offset TVD Reference:	Reference Datum

Reference Depths are relative to RKB = 20' @ 3482.00usft (AKITA 57) Coordinates are relative to: 10H

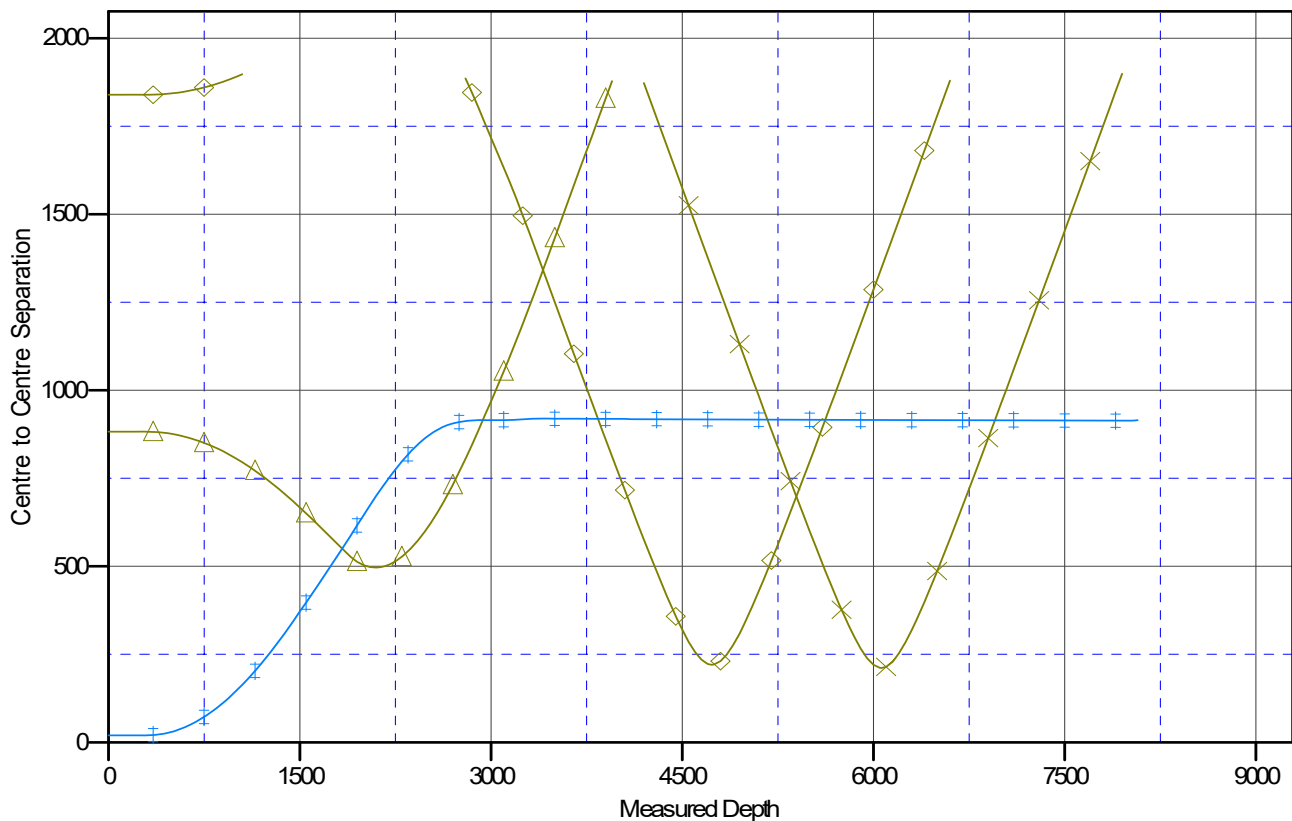
Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Central Meridian is -104.33334

Grid Convergence at Surface is: -0.07°

Ladder Plot



LEGEND

OFFSET: ARCO-FEDERAL 1, OH, OH V0
 OFFSET: POLO AOP FEDERAL 1, OH, OH V0
 OFFSET: SERRANO FEDERAL 002, OH, OH V0



PROTOTYPE

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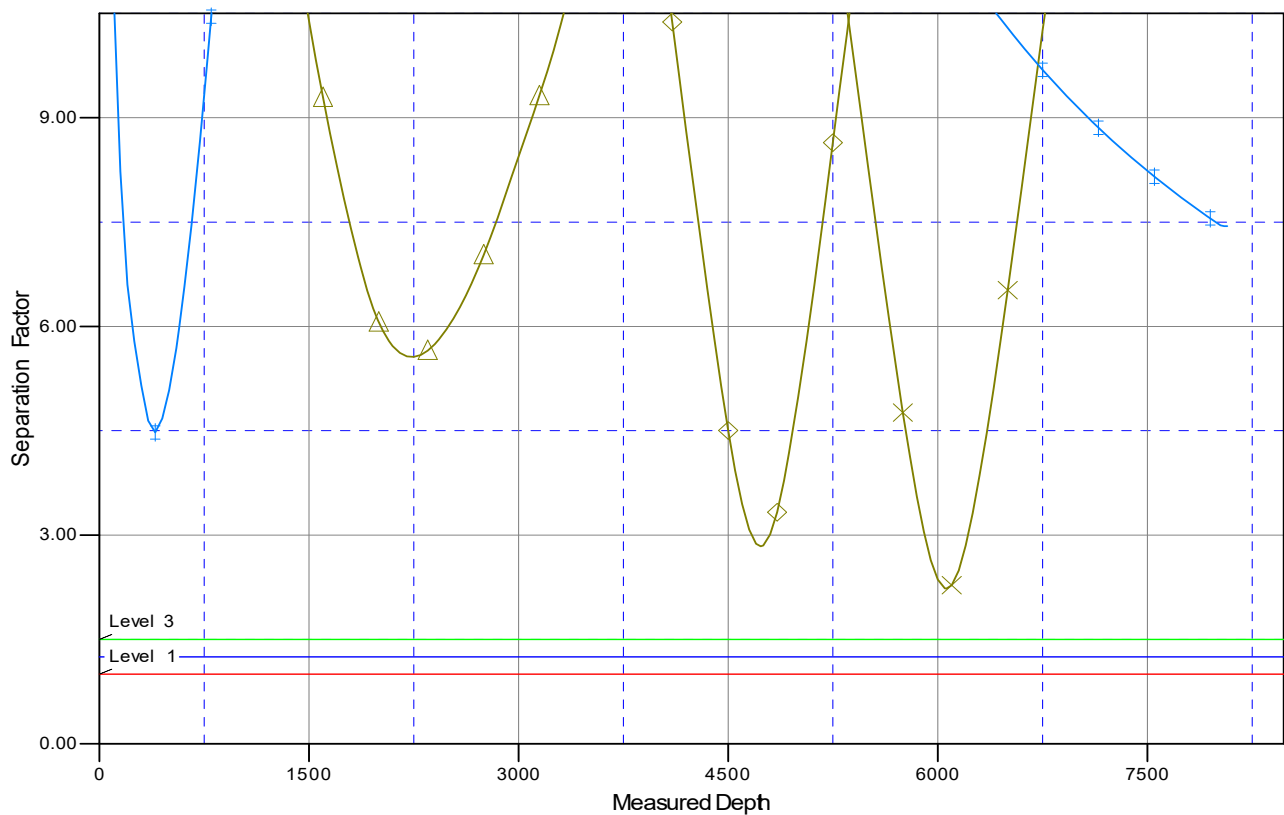
Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Central Meridian is -104.33334

Grid Convergence at Surface is: -0.07°

Separation Factor Plot



LEGEND

OFFSET: ARCO-FEDERAL 1, OH, OH V0
 OFFSET: POLO AOP FEDERAL 1, OH, OH V0
 OFFSET: SERRANO FEDERAL 002, OH, OH V0
 1H, OH, PERMIT V0

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/oed/contact-us>

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 571098

CONDITIONS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 571098
	Action Type: [C-103A] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Any previous COA's not addressed within the updated COA's still apply.	4/10/2026